

THE CULTIVATOR:

A MONTHLY PUBLICATION, DEVOTED TO AGRICULTURE.

I KNOW OF NO PURSUIT IN WHICH MORE REAL AND IMPORTANT SERVICES CAN BE RENDERED TO ANY COUNTRY, THAN BY IMPROVING ITS AGRICULTURE.—Wash.

VOL. VI.

NO. 5, WASHINGTON-ST. ALBANY, N. Y. DECEMBER, 1839.

No. 12.

Conducted by J. BUEL, of Albany.

TERMS.—ONE DOLLAR per annum, to be paid in advance. Subscriptions to commence with a volume.

Special Agents.—Lewis Hill & Co. Richmond, Va.; Bell & Entwistle, Alexandria, D. C.; Gideon B. Smith, Baltimore, Md.; Judah Dobson, bookseller, D. Landreth, and M. S. Powell, seedsmen, Philadelphia; Israel Post, bookseller, 38 Bowery, Alex. Smith, seedsmen, P. Wakeman, office of the American Institute, Broadway, New-York; Hovey & Co. Merchants' Row, Boston; Alex. Walsh, Lansingburgh, and Wm. Thorburn, Albany, gratuitous agents; John Thorburn, seedsmen and general agent, St. Louis, Mo.; E. Valentine, Johnson's Springs, Va. See No. 12, vol. v.

The Cultivator is subject to common newspaper postage.

Editor.—The published volumes are for sale at the subscription price, or, if bound, the cost of binding added. The bound volumes may be also had of our Agents in the principal cities.

THE CULTIVATOR.

TO IMPROVE THE SOIL AND THE MIND.

Close of the Sixth Volume.

This number closes the present and Sixth Volume of the Cultivator. In place of furnishing an extra number, which the late Proprietor and Conductor promised in the June number, when he announced his intention of closing this volume "by publishing a number on the 15th of August, and another on the 15th of October, in addition to the usual monthly publication, in order to have the seventh volume commence on the beginning of the year, when most periodicals commence their volumes," we have substituted, at a great expense, as a frontispiece, an engraved portrait of the late Editor, JESSE BUEL, Esq. taken but a short time previous to his death, by Mr. F. FINK, of this city. It is, as has been universally pronounced by all who knew the original, an admirable likeness;—as a picture, it speaks for itself. Mr. FINK is a young man, and has, in all his works, displayed great ability. The engraving is by Mr. THOS. H. CUSHMAN, also of this city, and recently of the firm of Hall, Packard & Cushman, Bank Note Engravers. Although he may find the branch of engraving here presented, less lucrative than that of making bank notes, yet we are satisfied, he must find it more congenial to his taste, and one which will afford him a far more lasting reputation, if he succeeds as well as he has in the above. He has been constantly employed for the last six weeks in producing this effort, and we can answer for the justice he has done the painting from which he copied, and which, we have no doubt, will prove full as acceptable to our very numerous list of subscribers. We shall furnish all our present as well as future subscribers to this volume, with a copy of the engraving.

We publish in this number, the two last addresses of Mr. BUEL, being convinced they will not only be acceptable, but meet the approbation of our readers. This course appeared advisable, inasmuch as they were his *last efforts* in the cause of his favorite pursuits, Agriculture and Horticulture, and by particular request of our correspondents.

It would not appear strange should the same ideas or sentiments be repeated, still, we think them not the less interesting, and should not be objected to on that account.

We also present a beautiful engraving on wood, (by Mr. R. H. PEASE, of Albany,) being a representation of the Horticultural Coat of Arms, as exhibited by that spirited and enlightened horticulturist, ALEX. WALSH, Esq. of Lansingburgh, at the Horticultural Fair at Niblo's, in New-York. It elicited great praise, and excited the admiration of the thousands who thronged to view it. Much credit is due to the *head* that conceived, and the *hands* that executed it.

We would ask the indulgence of our subscribers, for the lack of interest in our three last numbers; for they have been attended with numerous difficulties. The confusion naturally incident on assuming the "responsibility" of conducting this work, will appear evident to all; and at the moment we were preparing copy for

this number, we were called out with the troops, to aid our sheriff in serving certain processes against the tenants of the Van Rensselaer Manor; in consequence of which we were compelled to leave it in the hands of a friend, who has had no experience in such matters.

To our numerous and valuable correspondents, we again tender our grateful acknowledgments, and earnestly hope they will continue to lend us their aid in the great cause we have espoused.

To those gentlemen who have enlisted their services, and acted as agents, we also feel under great obligations for our extensive circulation, and we respectfully solicit a continuance of their favors for our next volume, the first number of which will appear in the early part of January next, under the editorship of the Genesee Farmer, (WILLIS GAYLORD and LUTHER TUCKER, Esqrs.) combined in the Cultivator.

Owing to want of time and space, we have been compelled to lay aside several communications, which will appear in our next volume.

The following table will show the extent of our present circulation.

| States and Territories. | No. of Subscribers. | Post-Offices. |
|---------------------------------|---------------------|---------------|
| New-York, | 3,341 | 762 |
| Virginia, | 1,866 | 402 |
| Connecticut, | 1,135 | 161 |
| Massachusetts, | 952 | 199 |
| Maryland, | 754 | 123 |
| Pennsylvania, | 659 | 189 |
| New-Jersey, | 621 | 125 |
| Ohio, | 578 | 156 |
| Vermont, | 563 | 109 |
| Illinois, | 424 | 118 |
| Indiana, | 315 | 69 |
| Kentucky, | 258 | 63 |
| Georgia, | 261 | 49 |
| Tennessee, | 230 | 58 |
| New-Hampshire, | 210 | 50 |
| North-Carolina, | 196 | 61 |
| Michigan, | 194 | 62 |
| Missouri, | 147 | 36 |
| South-Carolina, | 135 | 46 |
| Rhode-Island, | 106 | 20 |
| Delaware, | 88 | 19 |
| District of Columbia, | 78 | 3 |
| Wisconsin, | 77 | 21 |
| Alabama, | 70 | 23 |
| Iowa Territory, | 35 | 11 |
| Mississippi, | 25 | 10 |
| Louisiana, | 16 | 4 |
| Maine, | 15 | 12 |
| Florida, | 5 | 3 |
| Arkansas, | 4 | 4 |
| British Provinces, | 147 | 51 |
| Texas, | 1 | 1 |

Horticultural Coat of Arms.

The Horticultural Society of the Valley of the Hudson, held a meeting last September, in Niblo's Garden, in New-York.

The display of Plums, Peaches, Nectarines, Melons, Filberts, Pears, Grapes, &c. &c. were the most choice and inviting. The exhibit of flowers, particularly Dahlias, was truly gorgeous; and the show of vegetables fine. The most conspicuous contributors to the exhibition were, Dr. Torry, Messrs. Prince, Hogg and others, of New-York; Perry, of Brooklyn; Downing, of Newburgh; Holbrook and Kneeland, of Hyde-Park; Mrs. Stephen Van Rensselaer, Buel, Dennison and Wilson, of Albany; Strahan, of Half-moon; A. P. Hart, of Troy, and Mr. Alexander Walsh, of Lansingburgh. The part of the latter gentleman is thus noticed in the N. Y. Commercial Advertiser:

"The gentleman whose contributions are most extensive and various, is Alexander Walsh, and to his taste the society is indebted for a very appropriate and beautiful ornament at the head of the Saloon. It is what Mr. Walsh has fitly denominated the Horticulturists' Coat of Arms, forming a pyramid twenty-four feet high, constructed entirely of instruments of horticulture. A thermometer, handsomely decorated, is placed in the centre, with the motto, 'SCIENCE DIRECTS OUR OPERATIONS.' The spade, rake, hoe, &c. &c., covered with a wreath of evergreens, and decorated with a superb variety of dahlias, rare exotics, and native flowers, form the frame work of this fanciful device. From the most prominent parts of the structure, are suspended teasles, madder-root, woad, sumac, perennial flax, &c.; all produced by Mr. Walsh, emblematical of the aid horticulture affords to manufactures. The silk business is fully represented by the eggs, reeled silk,

and a tasteful display of the cocoons, and wreaths of silk moth. Near the centre, the grape, and that which maketh the heart glad, corn, wine, and oil, are justly represented. The pedestal and platform, some 40 feet long, is loaded with some fifteen or twenty varieties of plums, also apples, pears, filberts, a profusion of choice and rare vegetables, a diminutive bee hive, and a sundial. On the right, a little raised from the pedestal, are placed a variety of rural engravings. Copies of the New-York, New-England, Michigan, and Genesee Farmers, the Cultivator, Boston Horticultural Register, Gardeners' Magazine, London Horticultural Register, Robert Mudie's Botanic Annual, and other publications, fully to complete the Gardener's Budget, have likewise been placed upon the table. The whole furnishing a beautiful illustration of Mr. Walsh's motto, which is—

"Son utile aida que tricanda."

"I am useful, even when sportive."

"The annual discourse" was delivered by WILLIAM EMMERSON, Esq. and was such a production as might have been justly expected from the elegant scholarship and high attainments of the speaker."

We have endeavored to gratify the readers of the Cultivator, by a faithful representation of the *Horticulturists' Coat of Arms*; (see engraving in front of the volume.) The wood cut represents the entire pyramid and pedestal, but not the platform, which was too extensive for our page, and not altogether connected with the Coat of Arms. It was a neat, showy structure, which added much to the general effect in the Saloon. The centre shows the gardener's tools; on the right is the library for the improvement of his art; and on the left the plentiful fruits of his labors.

We should be pleased to see a steel engraving in some of our Annuals, giving the entire of this unique and singularly attractive device. We have presented a memorial of the principal part; a drawing of the whole we can furnish.

Comparison of the Temperature of November 1838, and November 1839, Deduced from observations made at the Albany Academy.

| | Nov. 1838. | Nov. 1839. |
|----------------------------------|------------------|------------------|
| Temperature of 1st half month | 41.20 | 39.20 |
| Temperature of 2d half month, | 23.29 | 32.71 |
| Temperature of the month, . . | 34.74 | 35.95 |
| Highest degree, | 60. | 56. |
| Lowest degree, | 1. | 13. |
| Monthly range, | 59. | 43. |
| No. clear days, | 17 $\frac{1}{2}$ | 16 |
| No. cloudy days, | 12 $\frac{1}{2}$ | 14 |
| No. of days rain fell, | 6 | 5 |
| No. of days snow fell, | 3 | 2 |
| Rain and snow, | 1 | 1 |
| Rain gauge, inches, | 3.55 | 2.95 |
| WINDS—North, (days.) | 2 | 4 $\frac{1}{2}$ |
| Northeast, | 1 $\frac{1}{2}$ | 2 |
| East, | 1 | 1 |
| Southeast, | 1 | 1 $\frac{1}{2}$ |
| South, | 6 $\frac{1}{2}$ | 7 |
| Southwest, | 4 $\frac{1}{2}$ | 2 |
| West, | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ |
| Northwest, | 13 $\frac{1}{2}$ | 10 $\frac{1}{2}$ |

Judge Buel's Address,

To the Agricultural Institute of New-London and Windham Counties.

GENTLEMEN—Farmers and Mechanics form the great body of our population. Their influence upon public manners and morals is consequently great. Their labors constitute the principal source of our wealth. They are to the community what the body is to the animal system—the seat of nourishment, of vigor, and of life. Though reciprocally beneficial to each other, the limbs would perish without the support of the body, while the body could live without the aid of the limbs. So in society, the different professions are reciprocally beneficial to each—they are all necessary to social and refined life; yet they are not all *equally* important to our well being. We might better spare a limb than to suffer the body, upon which all the limbs are dependent for life, to sicken and die. Productive labor, then, being the great fountain of wealth, and the source of moral health to the body politic, it should be fostered and honored, that it may more abound; and it should be enlightened, that it may better subserve its high purposes to society.

It must be apparent to all who can carry back their recollections to the commencement of the present century, that the useful arts have been undergoing, and are continually undergoing, rapid and wonderful changes in

* We should be pleased to have a copy of this address for publication.—*Cond. Cult.*

the economy of labor, and in the utility of results.—This change has been less, or rather less general, in the business of farming than it has in the mechanic arts, owing to the fewer facilities which the farmer possesses of acquiring useful knowledge in his business, by reading and personal observation. An improvement in the mechanics arts is no sooner made, than it becomes known, is adopted, and rendered profitable, in every part of the country; while improvements in agriculture, however important, travel slow, are received with distrust, and adopted with reluctance. To keep up with the spirit of the age—to prosper in our business and benefit the community, we must sedulously avail ourselves of all the prominent improvements which are going on in agriculture and the mechanic arts, and endeavor to infuse into those around us a spirit of industry, emulation and enterprise. For man does not live by his own labor alone. His success depends upon his being able to sell the surplus products of his labor to those who are able to pay for them, and to exchange the avails of his sales for such articles as he does not produce, and of which he stands in need. Hence he who is surrounded by prosperous neighbors can sell and buy to better advantage than he who is surrounded by poverty and want. I therefore lay down this proposition, that a man, whatever be his honest business, is profited by the prosperity of his neighbor, be that neighbor a farmer, a mechanic, a manufacturer, a merchant, a lawyer, a physician, or a clergyman: and that consequently, the true way to advance his individual interest is, to endeavor to improve the condition of his neighbors. It is a bad trait in the human character, and one which generally defeats its object, but which is nevertheless too conspicuous, that many seek to elevate themselves by depressing those around them—as if the poverty and misfortune of the one, added to the merits and virtues of the other. Not only self-interest but philanthropy and Christianity enjoin, that when we have provided comfortably for ourselves and our own, we should render all the assistance in our power to our brother who stands in need of our aid. The selfish being who lives but for himself, may, by amassing useless wealth, enjoy his hour or his day of fancied greatness; but he can never realize the pure, the elevated pleasures which flow from a life of active benevolence to the human family.

The farmers and mechanics who have united in this celebration, have many interests in common, and they do well to cultivate, in this way, kind feelings towards each other. They are neighbors; and there should be an interchange of good offices maintained between them, to heighten the pleasures of social intercourse—one of the chief enjoyments of society. It has been said that in fixing on a location for life, the grand requisites to comfort are, pure air, good water and a healthy soil; yet these seem incomplete, at least as regards comfort, without the addition of good neighbors. And with a right temper of mind, an individual may contribute much to make good neighbors. But the interests of the farmer and mechanic are otherwise intimately connected. They are mutually dependent upon each other for the comforts and necessities of life. The farmer wants the fabrics of the mechanic—the blacksmith, the hatter, the cabinet-maker, the tailor, &c; and these in turn want the bread-stuffs, the meat, the butter and cheese, the roots, and the raw materials of the farmer. Both classes are best accommodated by an interchange of commodities. If the farmer can exchange with the mechanic, at home, enough of the surplus products of his farm to buy what he wants of the mechanic, the expense of transportation to market, of both parties, is saved, and the uncertainty of sale, and the danger of loss, obviated. It is much better to exchange, at home, the products of each other's labor, for a fair equivalent, than to trust to the contingencies of a foreign market.

On the old continent, some men are born to rank and privilege, and others are born to servile labor. Arbitrary laws have prescribed, to a great extent, a man's condition in life, ere the infant breathes the vital air.—Arbitrary power has perverted, then, the laws of equality, which were intended for the human family, and has enacted artificial distinctions, which industry and genius can hardly surmount, nor hereditary rank hardly sink below. We know no such distinctions among us. We recognize neither the hereditary distinctions conferred by birth nor wealth. With us

"Merit makes the man,
Want of it the fellow."

And this merit is the reward of individual effort, the prize of intelligence, industry and virtue. And the competition is open to all. We are all endowed with natural capacities for improvement, like the soil we cultivate; and our reward, like the harvest, will be greater or less, in proportion to the measure of our self-improvement. But as with the rich soil, where nature has done most, man generally does least, so with the mind, where the expectations from parental aid are the greatest, the offspring seem least anxious to exert themselves to fulfil the high obligations imposed upon all. Poverty and want are often the strongest stimulants to physical and mental exertion; and when a laudable ambition is awakened to excel in any useful pursuit, it seldom stops at mediocrity. Adversity, more than prosperity, is the school in which men learn wisdom.

There are other high responsibilities resting on the farmer and mechanic, which should stimulate them to mental and moral exertion. They constitute the physical and political strength of our country. If they are ignorant, poor and dependent, they are very liable to

become the tools of demagogues, and the corruptors of public morals. If they are intelligent and prosperous, they will be exemplary in their habits, strong in their influence, and independent and patriotic in the bestowing of their suffrages.

With these incitements to improvement, and these duties and responsibilities before them, the farmer and the mechanic have abundant cause to put forth their best exertions, to study the principles of their business, and to profit by the genius and talents of others who excel in their respective callings; for however a man is gifted naturally, or however successfully he calls his physical and mental powers into action, he may learn much from the skill and practice of others.

The establishment of fairs is one of the most efficient means of improvement. They bring together the ingenious products of labor, from the exhibition of which every individual may learn something useful, to improve his mind and his business. They promote friendly intercourse and excite to laudable emulation; they enable their members to see, in contrast, the weakness of want and the strength of innate independence; in fine, they put in motion a thousand springs to self-respect, to industry, and to usefulness.

Another prominent means of improvement is the periodicals of the day, which treat of agriculture and the mechanic arts. These record the discoveries and improvements which are daily making in their respective branches of productive labor, and are written by practical men, or by men of science, with a view to benefit labor. I am sure I do not exaggerate, when I say that individuals have been benefited hundreds of dollars by an outlay of one dollar for a publication of this kind, in consequence of the useful information it has given him in the prosecution of his business. These discoveries and improvements in farming and the mechanic arts are continually going on, and he that will, may, by a moderate expenditure, largely profit by them.

The great secret of success in agriculture, consists in adapting our crops to our soils, in fitting the soil for their reception, in feeding them well, and in giving them proper culture; and the great obstacles to improvement are, ignorance of the principles or science of agriculture, a blind adherence to old practices, and a parsimony in expenditure. We better understand the economical management of animals than we do of plants. We all know that we cannot make fat beef, or pork, or mutton profitably, without we feed high. It requires a certain amount of food to keep an animal in condition—all beyond this which the beast can consume, digest, and assimilate, is virtually converted into flesh. Now, it makes a vast difference whether this extra food is converted into flesh in three months or twelve months; because, in the former case, three-fourths of the ordinary food required to sustain life and condition for a year, is saved to the feeder, besides an equal expense in attendance. It is precisely so with our crops. One well fed acre is more profitable than three poor fed acres, because it requires but one-third of the labor, and will, oftentimes, give an equal or a greater product. Take Indian corn for example, the average product of which I will assume to be thirty bushels an acre. Now, if we make an acre of suitable soil rich with 25 loads of unfermented dung, and tend the crop well, we may get ninety bushels of corn from the acre—and the amount has often been swelled to one hundred and one hundred and twenty. Here, then, is a net of gain of sixty bushels by feeding an acre well, over the net gain of an acre not fed at all. In regard to the cost of the manure, call it, if you please, \$25, and consider it capital expended. If you deduct this from the profits of the well fed acre, there would still remain a difference in favor of the latter, according to the common scale of prices, of \$35. If you merely charge the interest on the outlay, this would be \$1.50, and would diminish the difference between the good and bad acre but this amount, or would still leave the crop on the rich acre worth \$58 more than that on the poor acre. Estimate the farmer's corn crop at ten acres, and you will perceive that the cultivator of the ten good acres realizes a net profit of \$580 more than the cultivator of the ten poor acres.—Carry out this comparison to the products of the whole farm, and we shall at once discover why the good farmer finds a profit in an outlay every four years, of \$20 an acre, in enriching his lands. But if we suppose—what is, in fact, the truth—that the long manure, which causes this great increase in the corn crop, is as good for the next crop as it would have been had it been summer yarded, as was wont to be, and is now often the case, the absolute additional expense is nothing—the food of the corn crop is absolutely saved to the farm. I might carry these illustrations to other crops, to farms, and to districts of country. In my late journeys in the States of New-York and New-Jersey, I have seen many farms, and some districts, where the intrinsic value of lands has been enhanced a thousand per cent, or in a ten-fold degree, by the almost magic influence of improved husbandry, based upon the principle of working no more land than can be kept rich and worked well. Having gone into details in these matters on recent public occasions, I forbear repeating them here.

It should be borne in mind, that the elementary matters which constitute animals and vegetables are similar, though differently combined in animals and plants, and in different animals and in different plants. They are principally oxygen and hydrogen (the constituents of water,) nitrogen, which, with oxygen, forms the volume of the atmosphere, and carbon, the substance of charcoal. These elementary matters are found in all the combinations of matter—in a solid form in ani-

mals, vegetables, and rocks. By the interposition of caloric, or the matter of heat, they are rendered liquid and gaseous—liquid in water, and gaseous in the atmosphere. When they disappear in one form, they take another—they are never lost, never annihilated. They perform a constant routine, under fixed and established laws, termed natural laws, for the benefit of man, and for the order and preservation of the natural world.—As soon as the animal and vegetable cease to live, a decomposition or separation of their elementary parts commences, if exposed to the agency of heat, air, and moisture, and goes on until their organic forms are lost, and their elements are mingled with the soil, and fitted again to enter into new vegetable combinations, and are taken up, with the moisture of the soil, by the spongiolites, the mouths of plants, or are imbibed by their foliage, and become again parts of new and living organic matters. Thus the products of the soil are consumed by the animal, and these elementary matters become flesh and its natural appendages, or they are voided by the animal, and decay upon the soil. When deprived of their vitality, they soon resolve themselves into manure, and when these animal and vegetable substances, known by the general name of organic matters, are blended with the soil, they become the proper food for new generation of vegetables.

These facts suggest to the farmer who would keep up the fertility and productiveness of his soil, the necessity of—

1st, Consuming his crops, as far as is practicable, upon his farm, or of returning to it an equivalent, in nature, for what he carries off;

2nd, Of carefully husbanding every animal and vegetable substance which he can command, of preserving it from waste, and of faithfully and judiciously applying it to the soil, as food for his crops; and

3d, Of studying those laws of nature which govern, to a greater or less extent, the whole business of the farm, and which can never be violated with impunity.

I am aware that something further is necessary to satisfy the wants of the farmers in old settled districts—that their lands have been deteriorating under a bad, a skinning system of husbandry, until they require extra stimuli, other than the ordinary vegetable products of the crops, to bring them into a state of profitable culture. These extra means of inducing fertility are abundant. They may be found in almost every district or upon every farm, and no intelligent or spirited farmer need hesitate about employing them. As I have said, nothing is annihilated. The vegetable matters, the humus, or the geine, or whatever term we choose to give to the food of plants, which originally existed in our soil, are not lost—they have merely changed position. It is the province of the farmer to restore them to their place of usefulness, and his reward will be commensurate with his labors. These fertilizing matters, it is true, have, to a great extent been lost to present, though not to future usefulness. They have been dissipated by winds; they have passed into the sub-soil; they have been wasted by the rains, washed into swamps, rivers, and the ocean;—and yet they are, in a measure, recoverable, and may be made again to feed our crops and renovate our husbandry. These great changes cannot be effected by ignorance and hereditary conceit, nor in a day. They must be the work of patient industry, of liberal expenditure, of scientific knowledge—a generation. I will proceed to enumerate some of these means of renovating the fertility of the soil:

The first I shall name is a thorough system of draining. Many of our wet grounds have become rich in the elements of fertility at the expense of those which are naturally dry. There are certain coarse grasses which indicate the presence of surplus water within the range of their roots. In these vegetable matters, the food of plants do not decompose, or, to employ a term analogous to animal economy, do not digest, by reason of the exclusion of heat and air. No cultivated crop will do well in such situations, not from a lack of the elements of vegetable food, but from the inability of the vegetable stomach to digest it, and which, like the dyspeptic stomach of man, is rather injured, than benefited, by excess. Drain these lands thoroughly. Let in the general influences of the sun and the atmosphere, and cultivate them—the process of digestion or decomposition will go on, and the soil will render a liberal tribute to the cultivator.

In some cases draining will not suffice to induce fertility, by reason of an excess of vegetable matter, which resists putrefaction. This is no misfortune to the owner. If this peaty or vegetable matter, is placed in his cattle yards for a season, to the depth of twelve or eighteen inches, exposed to the tread of his cattle, and becomes intermingled and saturated with their dung and urine, or placed in piles with fermenting materials, it will undergo fermentation, and may then be blended with the soil to certain advantage. Another mode of converting these matters into the food of vegetables, is to pare and burn it, in smothered piles, and to spread the ashes upon grain and grass grounds; and still another mode, which has been successfully practised, is to carry on to these drained grounds, earthy materials, and to blend them with the vegetable surface.

The rivers, the salt marshes, and the sea are prolific in the materials of fertility. Their vegetables, their mud, and their fish, are all convertible into the food of farm crops.

From the materials already enumerated, great fertility has been imparted to farms which had been worn out, by bad husbandry. On mentioning to a visitor from South Carolina, Mr. Crowell, the other day, that I had

visited a farm upon Staten Island, Mr. Seeley's, where the proprietor, besides manuring well his crops of the season, had accumulated a surplus of 2,500 loads of excellent compost, from the cattle yards, the swamps, and the sea, within his jurisdiction, my visitor remarked, that he had almost equalled that himself, for he had actually applied to his plantation, during the year, twenty thousand loads of like compost, with the addition of such materials as the cotton crops afforded. Mr. Crowell is a large planter. He cultivated, this year, two hundred acres of sea-island-cotton. When he first turned his attention to manures, twelve years ago, he became, he told me, rather the butt of ridicule to his neighbors, than the subject of commendation. His continuing the practice, and his increased outlay upon it, is a sufficient evidence that he finds it profitable; while his neighbors are now giving their approval, by adopting his practice.

There are still other sources of fertility within the farmer's reach, which he may employ to profit. In a late jaunt in New-Jersey, I was surprised to find farms and districts, where I had been led to expect, from report, a poor sandy soil, a bad system of husbandry, and a depressed farming population—I was agreeably surprised to find, I say, instead of these indications of poverty and want, a sandy soil, to be sure, and naturally poor, but much of it made rich and productive—highly cultivated farms, and an intelligent, prosperous population. This fertility had been in a manner created by the enterprise of the inhabitants, in applying to their soil, often at the expense of twenty dollars or more an acre, the lime of Pennsylvania, the dung and street dirt of New-York and Philadelphia, the manure of their own State, and the animal and vegetable products of their own waters. Some of these materials, although not affording direct sustenance to plants, operate mechanically or chemically to the improvement of the soil, and tend essentially to increase its productive powers.

Another means of recovering the fertilizing materials of the soil, is deep or subsoil ploughing. Much vegetable matter has been carried down from the soil into the subsoil, by the operations of water. By breaking up the latter, we not only deepen the tilth, the pasture of plants, but by exposing it to atmospheric influence, we render the vegetable matter in it soluble, and adapted to the wants of the crop. We thus restore to the upper surface much of the fertilizing matter which has been rendered useless by filtration.

Another means of restoring fertility to worn-out soils, or of preserving or economizing it on unexhausted lands, is by the culture of root crops, and other green crops, as food for cattle, and for crops. This class of plants yield more food for both, than any other class; and they exhaust the soil less than any other class—for they are seldom permitted to mature their seeds, when the greatest requisitions are made upon its riches, and draw much nourishment from the atmosphere, which is always charged with the gaseous food of plants, as well by their leaves as their roots, the soil being kept permeable to the atmosphere, by the culture they receive. As cattle food, root crops, particularly the Swedish turnip, the beet and carrot, quadruple the amount that is given by grain or grass; they break and pulverize the soil by their tap roots, they clean it by their culture, and they return to it most in the form of manure. Clover and other green crops, buried in the soil by the plough, are a cheap means of increasing fertility, which every farmer has at command. A bushel of clover seed will suffice for six acres sown with small grain. The next or second autumn, it will give to the soil, if ploughed in, at least five tons to the acre, in tops and roots of vegetable matters, which are soon rendered soluble, and fitted to become a part of a new vegetable structure. The farmer, therefore, gets thirty tons of green succulent matter in return for his bushel of clover seed besides the benefit to the soil of pulverization by means of the tap roots of the crop.

This brings to my mind an old practice, which has in a measure been exploded, as involving a waste of labor and manure—I mean the practice of summer fallowing. It has been ascertained that the quantity of vegetable matters contained in old sward, amounts to twelve tons an acre. If the ley is cross-ploughed, this vegetable matter is turned to the surface, generally when it is in an active state of fermentation or decay, to the wasting influence of the sun and winds, and at least one-half of its fertilizing properties are lost to the soil. The principal object of a summer fallow is to subject the soil to thorough pulverization—a very commendable object, but which I think is as well effected, on the first furrow, by the harrow and the natural decay of the vegetable matters of the sod. This is every where penetrated by the roots of grasses, &c., and if the sod is well turned, these undergo speedy decomposition, and leave the soil light and loose, pervious to heat, air and moisture, essential agents in vegetable growth. The modern practice is to substitute for the naked fallow, a fallow crop, as potatoes, corn, oats, &c. upon the first furrow, preparatory to a crop of winter grain. The advantages of this practice are, the manure is all saved to the soil, the expense of labor is diminished, and an additional crop is obtained. The only plausible reason now urged for naked fallow is that it is necessary, on tenacious clays, to clean the land.

The alternating system of husbandry has not obtained among us that consideration which its importance demands. It is well known that ordinary lands will not bear a succession of the same crops without a successive diminution of product; and that if grain, grass, and roots are alternated or succeed each other, the decrease of fertility is much less apparent. This is ascribed to

the well authenticated fact, that different plants exhaust different fertilizing properties of the soil, or in other words, that each species requires a specific food, which other species do not take up. It is now generally conceded that wheat will not do well in a soil which has no lime in its composition—that clover and lucerne require gypsum—that flax cannot be raised on the same ground oftener than once in six or eight years, with advantage. These facts are explained upon the ground that on analyzing wheat, it is found to contain lime; clover on analysis, has yielded gypsum at the rate of four bushels the acre—and the supposition is, that a crop of flax exhausts the soil of some property essential to its perfection, which it takes years to restore. The crops can derive these supplies from no other source than the soil; and if the supplies are not there, the crop will be either deficient or defective.

There is still another reason to offer for alternating crops. The soil, if in grass, becomes annually more hard and compact; the roots are consequently restricted in their range for food; the heat and atmosphere become partially excluded, and the decomposition of vegetable food is arrested. The consequence is, that the finer grasses gradually disappear, or run out, as it is termed, and the grass crop gradually diminishes. If ploughed and cropped occasionally with roots, these inconveniences are obviated; the soil is broken and pulverized, and rendered pervious to solar and atmospheric influence, and the vegetable food which it contains is thereby rendered soluble; and if manure is given to the tillage crops, as it should and can be once during a course, the soil will become renovated and fitted again to receive the grass seeds, with the prospect of greatly increased burthen of hay.

The grasses are however not the only system of crops that are impeded by the alternating system of husbandry. The tillage crops, in turn are alike benefited, not only from the advantages of change which I have endeavored to point out, but from the vegetable matters of the sward, which, instead of remaining in a measure dormant and useless, are decomposed and become the active food of the crop; while the root crop, by their pulverizing and cleansing influence upon the soil, improve it, mechanically and chemically, for both grain and grass.

The arguments that I have urged for enriching your lands, and cultivating well what you do cultivate, apply with equal force to your domestic animals. It costs as much to keep a poor cow, a poor sheep, or a poor hog, having reference to breeds, as it does to keep a good cow, a good sheep, or a good hog. And yet such is the difference in the breeds of animals, and sometimes between individuals of the same breed, that the good animals will return twice, thrice, and sometimes four times as much in product as the poor ones, for the expense of their keep. The mule is supposed to have a preponderating influence in the character of their progeny, and will multiply more rapidly than the female, the cross of any improved breed. Those, therefore, who do not choose to go to the expense of buying superior animals of both sexes, can, by purchasing a male, progressively improve their stock at a moderate outlay. If the best animals are retained for breeding, and kept in good condition, especially when young, the progress of improvement will be greatly accelerated. It is by judiciously selecting good animals as breeders, and by taking proper care of them, that the favorite breeds of domestic animals have been brought to their present state of unrivaled excellence in Europe. An observance of the rules will produce the same results here, in due time, that has resulted from their observance in Europe.—Cattle are also essential to keep up the fertility of a farm. They convert the forage of the farm into meat, milk, and manure. The meat and milk go to enrich the pocket, and the manure to enrich the soil, and feed the crops.

As a general remark, it may be said, that labor and capital can be expended in no way more profitably by the farmer, than by enriching his lands. God has given to us all the elements of fertility, of plenty, and of happiness. He has given to man the capacity of appropriating them to his own use. He has commanded him to exercise those capacities with diligence; and although He has not promised, He seldom fails to bestow upon those who honestly keep the command, the highest rewards in temporal happiness.

The orchard receives less attention than its importance demands. If men do not drink cider, they must use vinegar and will eat apples. The orchard supplies a grateful dessert, and many economical culinary dishes, for our tables—and often profitable commodities for the market; and it has of late become a source of substantial profit for the food which it affords to farm stock of every description. The apple, whether sweet or sour, affords much sugar, one of the most nutritious properties found in vegetables, which is readily converted into beef, pork or mutton, by the domestic animals on the farm. It is asserted by some, who have experimented in the matter, that a bushel of apples is worth as much, for these domestic uses, as a bushel of potatoes. If this is true, or if apples are worth half or quarter as much as potatoes, an apple orchard is a valuable appendage to the farm; for an acre will often give from four to ten times as great a product in apples as it will give in potatoes, and without the expense of annual cultivation. In our zeal to promote the temperance reform, I fear some have neglected this branch of farming economy too much. The old orchards are disappearing, and few new ones are planted. We may as well disown the raising of rye as of apples, as both are liable to be

perverted to evil purposes; yet we may use both without abusing them. Wisdom, like truth, is often the medium between two extremes.

But whatever objections may lie against the orchard, none, I am sure, can be urged against a well cultivated garden. This affords almost a constant change of choice delicacies for the table, at once grateful to the palate, and highly conducive to health. No man eats so good fruits and vegetables as he who raises them, for none can so well enjoy them in all their freshness and perfection. A good garden is a matter of farm economy; for while it may be made to contribute largely to the sustenance of the family, its labors may be performed at odd times by the laborers of the farm, or by those who can or will do little else, without much expense. The object of our toil, as I have observed, is to secure the rational enjoyments of life. There is no profession which can gratify these indulgences to a greater extent than the farmer, if he will, from the varied products of his farm and garden.

There are other sources of enjoyment, in the garden, besides the innocent gratification of the animal appetites. It may be a source of high intellectual enjoyment, of useful instruction, and of moral improvement. It stimulates to the study of natural science, tends to purify and elevate the mind, to prevent the formation of bad habits, and to increase the delights of home, where the social and domestic virtues can only be well nurtured and enjoyed. So salutary is the moral influence of a highly cultivated garden, that it has been considered a strong indication, wherever it is seen, of high intellectual and moral worth in the possessor. God put our first parents into the garden "to dress it and to keep it," and God commanded the man saying, "of every tree of the garden thou mayest freely eat," except of the forbidden tree.

The utility of the silk business, as an auxiliary source of profit to the farmer, no longer admits of doubt, and so much capital has been vested in trees and buds, that this must become a branch of national labor. And no class can it be rendered more profitable than to the farmer, if judiciously managed. He can buy, however limited his means, a few mulberry trees; these he can multiply himself, with but little labor; he can plant them about his fences and waste grounds; he can purchase a few eggs to begin with; an out building, or a spare room, may be converted into a cocoonery; and without further expense the children and females of his family can gather the leaves and take care of the worms. When the cocoon are perfected, he may increase his eggs, and find a ready demand, and a fair price, for the surplus cocoons. The avails of the sale, be it two dollars or five hundred dollars, may be virtually considered as net profits to the farms. Fifty years ago I was familiar with the management of the silk worm in my native town, then in the county of Windham. Under every disadvantage of those times, it was then profitable, and an auxiliary branch of household labor. I have every reason to believe it may be rendered much more so now.

In regard to the mulberry best adapted to farm economy, much speculation is afloat, and differences of opinions no doubt honestly exist. I think it may be laid down as a natural law, that plants attain to highest perfection, for all useful purposes, in the climate and soil where they are found indigenous; and that their useful properties are diminished in proportion as they are more or less removed from their natural zone. When the public mind has settled down to sober reality, I think this law will be found to apply to the mulberry; and that those species and varieties will be found to be best which are naturally best adapted to our climate and our soil. In corroboration of this fact, it may be stated, that in Italy, whence we receive our best, and most of our sewing silk, the leaf of the black mulberry, which is there apparently indigenous, is almost exclusively employed for the production of this article. The white mulberry, which is perfectly hardy in France, has a decided advantage there over other varieties.—The Brussa, in the mountains of Asiatic Turkey, and the Alpine, from the Alpine regions of Europe, both hardy species, are for the like reason deemed superior in elevated or northern regions, where they withstand the rigors of winters. The native red mulberry of our forests, (*Morus Rubra*), though it has neither "fertilized or dear bought" to recommend it, will ultimately, I think, be found to be as good as any kind we can cultivate. All the species and varieties cultivated will no doubt produce good silk, and some better in the north than in the south—as is the case with the apple, the pear, the peach, the plum, &c. each variety having its favorite zone and soil in which it best develops its highest flavor. In selecting fruit trees, it is always better to take them from a colder than from a warmer climate, because they will be more hardy, and mature their fruits in higher perfection. But a word more of the red mulberry. I have had presented to me a handkerchief, a most beautiful and substantial fabric, produced by the silk-worm from this native species of the mulberry. I have also several samples of sowing silk, of great strength and beauty, produced from like materials. And I am advised by Dr. Martin, a highly respectable gentleman from Kentucky, that his neighbor has sold sewing silk to the amount of \$900 a year, for several years, produced by worms fed entirely on the native red mulberry; and that he has rejected offers of all other kinds of the mulberry, considering this decidedly the best.

If these observations upon the laws which govern the vegetable kingdom are correct, they plainly suggest to

the cultivator, who raises the mulberry tree to produce silk, to select those kinds for his plantation which are most hardy, and which will occasion the least trouble and expense in preserving.

I should take pleasure, gentlemen, in giving you my views upon many other subjects which pertain to your business. If what I have said shall be of any value to you, I shall be happy in the consciousness of having fulfilled a high personal duty—that of benefiting my native State. If what I have said, shall prove of no value, I have certainly said enough. My object has been, the improvement, in their business, in their standing in society, and in their public usefulness, of the Farmers and Mechanics assembled around me.

The privileges you enjoy, and the opportunities you possess of improvement are great; and with moderate prudence and industry, virtues which always triumph, your condition in society will be respectable independent, and in all probability, happy. Be content, therefore, with your lot—with the business which you have learnt, and are best acquainted with—and strive to improve in it, for your children and your country. *Let well enough alone;* and do not hazard present enjoyments for the precarious chance of doing better, in any business in which you are not practically acquainted, and in which, to you, there will be at least three blanks to a prize. And may a kind Providence smile upon your labors, and bless you in your stores, in your household, and in a pure and approving conscience.

Address of the Hon. Judge Buel,

Delivered before the Agricultural and Horticultural Societies of New-Haven County, Sept. 25, 1839.

I appear here gentlemen, by invitation, to address you on the cultivation of the soil, which it is the object of the associations here convened to promote improvement in. I have been prompted, in the undertaking, rather by a desire to render a service, than from a confidence in my ability to perform one; and in the few remarks I have to offer, shall need much of your indulgence, for defect in style, and deficiency in matter.

Agriculture and Horticulture are intimately related to each other. They both depend upon the soil, and the animals and plants which it nurtures, for support, for profit, and for pleasure. They both administer, and are indispensable, to our wants and comforts. They are governed in their operations by the same natural laws. Agriculture has cognizance of the farm, which supplies our principal wants; Horticulture, of the garden, which administers to our more refined appetites, to our health, and to the rational pleasures of the mind. The one gives us bread and meat, and the materials for our clothing, the other the choice delicacies for the table, and multiplies around us the charms of floral beauty, and rural scenery. Both tend to beget habits of useful industry and sober reflection, and to improve us in all the social relations of life. It is befitting, therefore, that institutions designed to foster and promote improvements in these primary and associate branches of labor, should unite in their anniversary celebration, and in returning thanks to the Supreme Being, for the bounties of a fruitful season.

Of the utility of these celebrations, and exhibition of the products of the farm and garden which are made at them, I have no kind of doubt. They bring to public notice whatever is new and most valuable, in a business which highly interests us. They perform the work of years, in diffusing useful knowledge in all the departments of rural labor. They awaken, in the bosoms of hundreds, the dormant powers of the mind, which otherwise might have slumbered in apathy. They excite to industry, to emulation, and to the study of those laws which every where control the visible creation, and which enlighten and reward all who humbly seek and follow their counsels. Nor is it the cultivator of the farm and garden alone that are to be benefitted by these exhibitions. Whatever tends to increase and improve the products of the soil, serves to augment the common stock, and enables the grower to supply the market with more and better products, and to buy more liberally of the other classes in return. The merchant, the manufacturer, the mechanic, and the professional man, have all, therefore, as deep an interest in promoting the improvement of agriculture and horticulture, as the farmer and gardener have. Society is in some measure a joint concern, at least so far as relates to what are termed the producing classes; the more these earn by their labor, the greater is the accession of substantial wealth to the community. The amount of honey in a hive, depends not upon the number of bees which it contains, but upon the labor and skill of the *working bees*. The farmer virtually provides for the other classes, and is at the same time their principal patron and customer; and although his labors are too often held to be low and menial, by those who cannot, or will not, appreciate their value, his condition affords the best criterion by which to judge of the welfare of those around him. No country can long flourish, or preserve its moral and physical health, whose agriculture is neglected and degraded. The amount of a farmer's sales, and of his purchases, will depend upon the surplus products of his farm, and upon the profits of his labor. Double these, by an improved system of husbandry, which I feel assured can be done, and which has been far more than realized, in many old districts of our country, and you will double the substantial wealth of the neighborhood, and impart corresponding life and activity to every other department of business. If we look to Spain, to Portugal, to a great portion of Italy, to South America, or any other

country where agriculture is neglected, or holds but a subordinate rank, we shall find a degraded population, characterized by superstitious ignorance, poverty and crime. Every class of the community, therefore, has a deep interest in promoting the improvement of the soil; and all should willingly contribute their aid towards enlightening, honoring, and rewarding those who are honestly employed in its cultivation.

With regard to the utility of agricultural and horticultural societies, much will depend upon the objects which bring together their members. If they associate for selfish purposes, merely to monopolize the spoils, and withdraw whenever they are disappointed in their sinister hopes, jealousies and apathy will ensue, and the association will fail, as many under like circumstances, have fallen, without public loss or public regret. But if the association is formed for mutual improvement, and in the benevolent and patriotic desire to do a public good—to stimulate and reward industry and enterprise, however humble their condition—and strives by concentrated and persevering efforts, to improve the condition of a district, of a county, or a state, then will it inspire public confidence, obtain public support and become a public blessing. To illustrate this last proposition, I beg to refer to some associations which have been tried, and whose labors have been crowned with palpable and brilliant success.

The counties of Berkshire, Essex, and Worcester, in Massachusetts, have each, for many years, maintained an agricultural society; and they each distribute ten or twelve hundred dollars a year, one half of which is paid out of the state treasury, in prizes to successful competitors in the various departments of agricultural and household labor. It is said, and I believe with truth, that every dollar thus expended, has made a return of twenty dollars, in the increase of agricultural products which it has caused; and so satisfied are the inhabitants of the benefits of the expenditure, that an increased spirit is annually manifested, by all classes, to maintain and perpetuate these nurseries of industry and improvement.

The Highland Society of Scotland affords another illustrious example of the utility of agricultural associations, when conducted with a view to public improvement. This society was organized in 1784, but so few were its members, and so limited its means, that it attracted but little public notice, nor effected any great improvement in husbandry, till the commencement of the nineteenth century. Yet it had sown the good seed which never fails, under proper management, to yield to the husbandman a bountiful harvest. Nor did it fail in this case. The society now numbers twenty-two hundred members, embracing most of the opulent and influential men of the country, of all professions, and distributes annually in prizes, about seventeen thousand dollars. In no country or district has agriculture made more rapid strides in improvement, than it has in Scotland, since the organization of this society; and although it may not have been the only, it most assuredly has been a principal cause, of this wonderful and salutary change. Up to 1792, the agriculture of Scotland, to adopt the language of the Edinburgh Quarterly Journal of Agriculture, was "wretched—excruciatingly bad, in all its localities! Hardly any wheat was attempted to be grown; oats full of thistles was the standard crop, and this was repeated on the greater part of the arable land, while it would produce twice the seed thrown into it; turnips, as part of the rotation of crops, was unknown, few potatoes were raised, and no grass seeds or clover were sown. A great part of the summer was employed, in the now fertile shire of Fife, in pulling thistles out of the oats, and bringing them home for the horses, or mowing the rushes, or other aquatic plants, that grew on the bogs, around the homestead." But a change soon came over the land. The seed which had been sown by the Highland Society had germinated, and its luxuriant foliage already covered the soil. In 1815, according to the authority I am quoting—"beautiful fields of wheat were to be seen,—drilled green crops every where abounded,—the bogs had disappeared,—the thistles no longer existed,"—naked fallows were abolished, draining was extensively introduced; wet lands were made dry; poor weeping clays were converted into turnip soils; and "whole parishes were completely transformed from unsightly marshes, into beautiful and rich wheat fields, and where the plough could scarcely be driven for slush and water, were heavy crops per acre, and heavy weight per bushel."* The improvements in Scotch husbandry have continued to advance, until, according to the estimate of Sir John Sinclair, and Professor Lowe, both high authority,—until the acreable products of her soil more than double those of our Atlantic states.

The means adopted by the Highland Society to effect these radical improvements in Scotch husbandry, are such as may be employed by us with almost a certainty of corresponding success. "In the days of its youth and feebleness," says the Quarterly Journal I have just quoted, "the Highland Society sent the leaven of the turnip husbandry into all the glens and straths of the north, by offers of small prizes to certain Highland parishes, and the same may be said as to the growth of clover and the finer grasses. As it advanced in strength as to numbers, and to cash, attention was turned to premiums for stock; then came offers of reward to men of science to discover better implements and machines, to diminish friction, and consequently draught, such as in the threshing mill, and other parts of agricultural ma-

chinery. Still advancing in the scale of intellect and of science, premiums were offered for essays to bring to light the facts connected with chemistry and natural philosophy; and, under the auspices of the society, was set up the Quarterly Journal of Agriculture, a work which has been the vehicle of conveying so much useful information to the agriculturist, that we humbly venture to say, it ought to appear on the book-shelf and table of every farmer's parlor. After this, the great stock shows were resolved upon." At the Glasgow show in 1838, there were exhibited for prizes, 461 neat cattle, 121 horses, 274 sheep, and 47 swine; total 903 domestic animals, in 634 lots. Of the other kinds of competitors, the numbers were as follows:

| | |
|---------------------------|----|
| For Butter, | 18 |
| " Full Milk Cheese, | 15 |
| " Skim Milk Cheese, | 6 |
| " Wool, | 8 |
| " Roots and Seeds, | 13 |
| " Implements, | 23 |

In 88 lots.

The number of persons present at the exhibition was estimated at over 17,000, besides workmen and official people,—not one thousand of whom probably left the exhibition without carrying home with him some newly acquired knowledge in his business, or some new stimulus to improvement and industry. Not only has Scotland profited by the labors of her agricultural society, but Great Britain generally, and even the United States have been highly benefited by them. The information which that society has promulgated, has been widely disseminated among us by our agricultural journals, and has contributed not a little to the improvement of the agriculture of our country. And in England, which had been thrown into the back ground by the superior improvement of Scotch husbandry, it has within the last year, induced the formation of the English Agricultural Society, on a broad and liberal scale, which promises important advantages to English husbandry, and to agriculture generally.

As evidence of the utility of horticultural societies in multiplying and improving the products of our gardens, and in promoting rural embellishments, I would refer to the neighborhoods of Boston and Philadelphia, where societies of this kind have long existed, and to the Horticultural Society of London. In the first named cities, and their environs, the progress of horticultural improvement has been manifestly great. Many new and choice fruits, culinary vegetables, and ornamental plants, have been introduced, culture has been much improved, the markets better supplied, and prices cheapened. The London Society, although its garden has been established but about twenty years, has concentrated in it, from both continents, and from the islands of the sea embracing every clime, more than five thousand varieties of edible fruits, including fourteen hundred varieties of the apple, and seven hundred of the pear, and an innumerable number of ornamental plants, many of them before unknown in our catalogues. Its collections of pears, which embrace hundreds of recent origin, from Flanders and from France, have been already broadly spread over these states, and supply our dessert with a succession of this delicious fruit. As a corresponding member of this society, I have participated, and have enabled others to participate, in the good which it has been generously diffusing abroad. In 1825, and at subsequent periods, I have been supplied liberally with grafts of the choicest fruits which it had collected.

The great obstacles to horticultural improvement, are ignorance of the relative merits of different kinds of fruits and culinary vegetables, and of the proper modes of cultivating and preparing them for the table. The generality of country gardens exhibit but a scanty assortment of vegetable productions, and these are but badly cultivated, and often of inferior quality. The tendency of horticultural exhibitions is, to show the good and bad in contrast, or rather to promulgate a knowledge of the better sorts, of their culture and use, to excite useful competition, and to demonstrate the utility of garden culture, as a source of health, pleasure, and profit. I have had many fruits presented to me, which the donors considered of the first quality, but which I found, on comparison, to be of secondary, or inferior grade. The man who has seen or tasted only inferior fruits, may well mistake them for good ones. It is as easy to cultivate good fruits as bad ones; and no one eats so good fruits as he who cultivates them himself. It is as easy to cultivate the vergaleu as it is the choke pear; the green gage as the horse plum; and yet the difference between them, in all the qualities which we most esteem, is incomparably great. But till we can show our neighbor better fruits, he will continue to cultivate and rest content with his choke pear and horse plum.

With regard to what is termed ornamental gardening, or the cultivation of flowering shrubs and plants, there is an objection, real or affected, often made by very many people, on the ground that it yields no profit. If the great object of life was to accumulate money, without enjoying any of the comforts which it confers, save the gratification of animal appetite, the objection would be conclusive. But we are endowed with other and higher appetites than the mere brute; and Providence has everywhere surrounded us with suitable objects for their development, and innocent gratification. And shall we reject the proffered benefaction so kindly tendered for our benefit, because it adds nothing to our pelf? And what is there in the natural creation, better calculated to soften down the rough asperities of our nature, to

awaken kind feelings towards each other, and excite reverence and love for the Most High, than a familiar acquaintance with the wonders and beauties of His vegetable kingdom. Did you ever know a misanthrope, or a miser, who was an admirer of flowers? I would not recommend the neglect of more important duties, for the culture of a flower garden: yet when there is ability or leisure, and these may be found to a greater or less extent in almost every family, a taste for floral beauties should be inculcated in the young, not only as a source of rational pleasure, but as a salutary precaution against bad companions and bad habits. The mind must be employed, and must have recreation. It is better to direct it to the works of the Creator, than to the works of man. Lord Bacon has said of the garden, "it affords the purest of human pleasures—the greatest refreshment to the spirits of man—without which buildings and palaces are but gross handiworks."

But I am forgetting myself. In my ardor to commend horticulture, for its useful, elevating, and purifying influence upon the habits and manners of society, I did not recollect that I am addressing the highly polished inhabitants of a classic city, who have long since demonstrated, in practice, the truth of the lessons I would inculcate. I will therefore dismiss this branch of my subject, and turn to the more rugged, though not less important topic of agriculture; barely adding—

That in all endeavors to improve the condition of society, whether religious, moral, or industrial, individual efforts and example can effect but little; and hence, that in every great work of reform or improvement, the concentrated strength of many has been resorted to, and brought to a focus, by means of associations; and that the great objects of society are not likely to be promoted in a more eminent degree, by any, than by associations formed for like purposes with those which I have now the honor to address.

Being a native of this state, and having spent my early days within its borders, I can well remember the farming practices that were wont to prevail. The farm was, to use the commendatory language of that day, "suitably divided into meadow, pasture, and plough land," and each division was exclusively devoted to its object, until most of the nutritious grasses had "run out," in the meadow, and the plough land had become too much impoverished to bear a remunerating crop. Many an acre was turned into "old field," or commons, destitute alike of natural or artificial herbage, affording scanty gleanings to half famished cattle. I beg not to be misunderstood. I am describing what was a bad feature in Yankee husbandry. Farming has no doubt recently undergone great improvements in Connecticut, as it has elsewhere. Yet on a fair comparison with highly cultivated agricultural districts, I believe that it will be found that the husbandry of this state, in the main, is susceptible of great improvement. The lands of Connecticut were originally rich and productive. The earthy elements remain in a great measure unchanged; the seasons are about as propitious as they were wont to be; and the lessons in improvement that have been taught elsewhere, leave little reason to doubt, that, under proper management, they may again be restored to their original fertility.

In a late tour which I made through parts of New-York and New-Jersey, I found many evidences of recent improvement, and I doubt not similar ones abound in my native state. In a part of Dutchess county, which I visited, the best farms have been sold within my recollection, with improvements and buildings, at from seven to seventeen dollars an acre. They cannot now be bought for one hundred dollars an acre; and one was sold last year at auction, without buildings, at one hundred and thirty dollars an acre. Fifteen years ago, a farm in Western New-York, of 400 acres, exhausted by bad husbandry, was bought by a Scotch farmer for \$4,000. This farm has been so improved by good husbandry, that the owner was last year offered for it \$10,000. He refused the offer, upon the ground that it actually netted him the interest of \$60,000, or \$10.50 the acre. A farm was pointed out to me in New-Jersey, which was recently sold for \$7 the acre, and that was all it was said to have been worth in its then condition. By a liberal outlay in draining, it being level and wet ground, and in liming, manuring, &c. it is now considered worth \$125 an acre. I went over another farm which a few years ago was bought at the same price, and which now, on account of the improvements which have been made upon it, is considered worth \$100 per acre. I am informed on the best authority, that similar cases of the rapid increase in the products and value of farms, consequent upon an improved system of management, are to be found in Pennsylvania, Delaware, and Maryland. Although these cases are isolated ones, they nevertheless serve to show the practicability of vastly increasing the value and products of our exhausted lands.

Among the causes which have essentially contributed to the deterioration of our lands, and the consequent depression of our agriculture, I consider the following as prominent:

Ignorance of the principles of agriculture;

The want of a sufficient outlay in the management of our farms; and

The low estimation in which the employment has been held by all classes, including farmers themselves.

Agriculture has too generally been considered a business requiring mere physical power, with which the principles of natural science had little or nothing to do. To plough, sow, and gather the crop, has been the general routine of farming operations, regardless of the poverty which our practice was inflicting upon the soil

and upon our children. Like the reckless heir of wealth, we found ourselves in possession of a treasure; and without inquiring for what purpose it came into our hands, or realizing our obligations to husband and preserve it, for others, we have squandered it lavishly, through our ignorance or our folly. True, we have been occasionally admonished of our error, by the schoolmen; who, wrapped in abstract science, and knowing little practically of its application to husbandry, have as often tended to confuse and mystify, as to enlighten and instruct. Hence the prejudice which has arisen against book-farming. But science and art are now uniting their labors, and are deriving mutual aid from each other, on the farm, as they have for some time been doing in the manufacture and in the shop of the artisan. A new era is dawning upon the vision of the farmer; new light is illumining his path, and new interest and new pleasures are urging him on to improvement. He begins to study the laws which Providence has ordained for the government of improved culture, and he finds, in their application to his labors, the means of increasing profits and high intellectual enjoyment. And the more he studies and is guided by these laws, the more does he become satisfied of former errors, and of his comparative limited sphere of usefulness. Science is probably capable of rendering more important services to husbandry than to any other branch of labor, and presents a wider field of useful study to the cultivator of the soil, than to any other class of society.

The deficiency in farming capital, or rather the stinginess with which capital is employed in improving and maintaining the condition of our lands, is another cause of declension in the profits and character of our agriculture. The farmer is too prone to invest his surplus means in some new business, or in adding to his acres, instead of applying them to increase the profits of his labor and the products of his farm. He either works more land than he can work well and profitably, or he diverts to other objects the means which would yield a better return if applied to the improvement of the farm. He is apt to consider twenty or thirty dollars an enormous and wasteful outlay upon an acre of land, or upon a choice animal; and yet the interest of this outlay will be ten times paid by the increase of crop or the increase of the animal; and in most cases the principal also will be returned to him in the course of two or three years. Many of the most thriving farmers in southern New-York, New-Jersey, and Pennsylvania, make a quadrennial expenditure of twenty dollars or more to manure an acre; and it has become a maxim with them, that the more the outlay for manure, the greater the net profit of their lands. But it is not the outlay for manure alone, that demands a liberal expenditure of capital. Good seed, good farm stock, and good implements, are all essential to the economy of labor, and to neat and profitable farming. And I think it will appear from the cases I have quoted, that in many locations, capital may be very advantageously employed in reclaiming wet and marshy grounds, generally rich and the most productive when laid dry.

When our cattle grow lean and threaten to disappoint our hopes of profit, we do not hesitate to impute the evil to the want of food, or to inattention in the herdsman. And if we are prudent managers, we at once graduate our stock to our food, knowing that one well fed animal is of more value in the market, than two animals that carry but skin and bones, and take care that the food is properly fed out. When our crops become lean, we need not hesitate to ascribe the decrease in product to like causes—want of food, or want of attention in the farmer; and prudence and profit in like manner require, that our crops, like our animals, should be limited to the food and labor which we have to bestow upon them. In other words, an acre well manured and well worked, will be found to be more profitable, than four poor acres badly worked.

I may here be asked, from whence are to be obtained the vast supplies of manure requisite to manure our old lands? I answer, from a multiplicity of sources around us, from every animal and vegetable substance within our reach. Nothing that has once been part of an animal or a vegetable, but can be converted into corn, grass and roots. I think I may assume as facts that upon an average, not half the manure is saved upon our farms that might be, and that this moiety is half lost before it is applied to the soil. Every horse, ox or cow, wintered upon the farm, if well fed, and littered with the straw, stalks, &c. of the crop, should make from six to ten cords of good manure. Dr. Coventry, late professor of agriculture at Edinburgh, estimated that the straw of an ordinary acre of grain, computed at 21 cwt. may be converted by the urine and liquids of the stables and cattle yards, into three and a half tons of manure; that meadows that cut one and a half tons of hay will give four tons of manure; clover, the first year, six tons, and the second year, five and a half tons per acre; and that with the extraneous substances which may, with due care, be collected without expense from the roads, the ditches, the ponds, and from refuse of every kind about the house and premises, the acreable amount should be ample sufficient for a full supply of manure once during every course of the four year system of husbandry.—Arthur Young, with 6 horses, 4 cows, and 9 hogs, which consumed 16 loads of hay and 29 loads of straw, obtained 118 loads of manure, 36 bushels to each; and from 45 fatting oxen, well fed and littered, 600 tons of rotten manure. But an American lawyer, and an excellent practical farmer withal, has gone beyond these estimates. I visited his farm a few weeks ago, which lies upon the sea shore. It consists of about 200 acres, most of which

was in a course of crops. The crops of the season had all received an ample supply of manure, as their appearance indicated—and yet I was shown masses of well prepared compost, in reserve, consisting of yard manure, peat ashes, peat earth, sea weed, and fish—estimated at twenty-five hundred loads—all produced upon his own farm.

The third obstacle to agricultural improvement, which I propose to notice, is the subordinate rank to which this employment has been consigned, and to which the farmers themselves have contributed, by a want of respect for themselves and respect for their vocation. The wholesome habits of society have been so broken up, by the civil and political convulsions of the age, and the inordinate thirst for acquiring wealth and fashionable consequence, through mercantile and other speculations, that honest productive labor has been thrown entirely into the background, and considered not only ungentle, but menial and servile. Yet I venture to lay down this proposition, that he who provides for the wants and comforts of himself and family, and renders some service to society at large, by his mental and physical industry, performs one of the high duties of life; and will ultimately be rewarded in the conscious rectitude of his life, by a greater measure of substantial happiness, than he who makes millions by fraud and speculation, to be squandered in extravagance or wasted in folly, by his children or grand-children. The revolutions that are constantly taking place in families, sufficiently admonish us, that it is not the wealth we leave to our children, but the industrial and moral habits in which we educate them, that secures to them worldly prosperity, and the treasure of an approving conscience.

The farmers, I have remarked, share in the errors of the day. Not content with the gains which are ever the reward of prudent industry, and which might be greatly increased by the culture of the mind,—nor content with one of the most independent conditions in society, hundreds and thousands of them seek other and new employments, and some of truly menial character, to get rid of labor, the greatest blessing to man, and to raise themselves in the imaginary scale of fashionable society. And if they cannot participate themselves in this imaginary greatness, and it is seldom any thing more than imaginary, they are anxious to inflict the evil upon their posterity,—to rear their sons to the law, the rail-road to office,—to political power and turmoil; to make them merchants, a useful, but greatly overstocked business, or to place them in some other genteel employment, which shall exempt them from the toils of labor, the salt that best preserves from moral corruption.

Mistaken men! What class in society have within their reach so many of the elements of human enjoyments—so many facilities for dispensing benefits to others—one of the first duties and richest pleasures of life—as the independent tillers of the soil? "The farmer," says Franklin, "has no need of popular favor; the success of his crops depends only on the blessing of God upon his honest industry." If discreetly conducted on the improved principles of husbandry, agriculture offers the certain means of acquiring wealth, and as rapidly as is consistent with the pure enjoyments of life, or with the good order and prosperous condition of society.—Agriculture is the golden mean, secure alike from the temptations of mushroom opulence, and the craven sycophancy and dependence of poverty. "Give me neither poverty nor riches," was the prayer of the wise man of Scripture "lest," he added, "lest I be full and deny thee, and say, who is the Lord? or lest I be poor, and steal, and take the name of my God in vain."

When we consider that agriculture is the great business of the nation—of mankind; that its successful prosecution depends upon a knowledge in the cultivators of the soil, of the principles of natural science,—and that our agriculture stands in special need of this auxiliary aid,—we cannot withhold our surprise and regret, that we have not long since established professional schools, in which our youth, or such of them as are designed to manage this branch of national labor, might be taught, simultaneously, the principles and practice of their future business of life, and on which, more than any other branch of business, the fortunes of our country, moral, political, and national, essentially depend. We require an initiatory study of years in the principles of law and medicine, before we permit the pupil to practice in these professions. We require a like preliminary study in our military and naval schools, in the science of war and navigation, ere the student is deemed qualified to command. And yet, in agriculture, by which, under the blessing of Providence, we virtually "live, and move, and have our being," and which truly embraces a wider range of useful science than either law, medicine, war or navigation, we have no schools, we give no instruction, we bestow no governmental patronage. Scientific knowledge is deemed indispensable in many minor employments of life; but in this great business, in which its influence would be most potent and useful, we consider it, judging from our practice, of less consequence than the fictions of the novelist. We regard mind as the efficient power in most other pursuits; while we forget, that in agriculture, it is the Archimedean lever, which, though it does not move, tends to fill a world with plenty, with moral health, and human happiness. Can it excite surprise, that under these circumstances of gross neglect, agriculture should have become among us, in popular estimation, a clownish and ignoble employment?

In the absence of agricultural professional schools,

* W. A. Seeley, Esq. of Staten Island.

could we not do much to enlighten and raise the character of American husbandry, by making its principles a branch of study in our district schools? This knowledge would seldom come amiss, and it would often prove a ready help under misfortune, to those who had failed in other business. What man is there, who may not expect, at some time of life, to profit directly by a knowledge of these principles? Who does not hope to become the owner, or cultivator of a garden or a farm? And what man, enjoying the blessing of health, would be at a loss for the means of an honest livelihood, whose mind had been early imbued with the philosophy of rural culture—and who would rather work than beg?

An early acquaintance with natural science, is calculated to beget a taste for rural life and rural labors, as a source of pleasure, profit, and honor. It will stimulate to the improvement of the mind—to elevate and to purify it,—to self-respect, to moral deportment. And it will tend to deter from the formation of bad habits, which steal upon the ignorant and the idle unawares, and which consign thousands of young men to poverty and disgrace, if not to premature graves. A knowledge of these principles, to a very useful extent, can be acquired with as much facility in the school, or upon the farm, as other branches of learning. Why, then, shall they not be taught? Why shall we withhold from our agricultural population that knowledge which is so indispensable to their profit, to their independence, and to their correct bearing as freemen? Why, while we boast of our superior privileges, keep in comparative ignorance of their business, that class of our citizens who are truly the conservators of our freedom? I know of but one objection:—the want of teachers. A few years ago, civil engineers were not to be found among us. The demand for them created a supply. We have demonstrated that we have the materials for civil engineers, and that we can work them up. We have materials for teachers of agricultural science, which we can also work up. Demand will always ensure a supply.

The enumeration of the foregoing obstacles to agricultural improvement, sufficiently indicates the means which will be efficient in removing them. The means consist, so far as I now propose to notice them—

1. In giving a professional education to the young farmer, which shall embrace the principles and the practice of the business which he is designed to follow in life, and

2. In diffusing more extensively among those who have completed their juvenile studies, and are better fitted to profit by the lessons of wisdom and experience, a knowledge of the same principles, and of the best modes of practice which these principles inculcate, and which experience has proved to be sound.

We have professional schools in almost every business of life, except in the cultivation of the soil, one of the most important and essential of them all, and one embracing a larger scope of useful study in natural science, and in usefulness to the temporal wants of the human family, than any other. The policy of monarchs, and of privileged orders, has been to repress intelligence in the agricultural mass, in order to keep them in a subordinate station. But neither the policy nor the practice should be countenanced by us. Our agriculturists are our privileged class, if we have such. They are our sovereigns, because, from their superiors numbers, they must ever control our political destinies, for good or for evil. And the more intelligent and independent we can render them, the more safe we make our country from the convulsions of internal feuds, and the danger of foreign war.

I put the question to fathers—Would you esteem that son less, or think him less likely to fulfil the great duties of life, who had been educated in a professional school of agriculture, with all the high qualifications which it would confer for public and domestic usefulness, than him who had been educated for the counter, the bar, or other high professional callings? Or which could you best rely for support and comfort in the decline of life? Nay, I will venture to carry the appeal farther—to the discriminating judgment of the unmarried lady—Would you reject, as a partner for life, the student of such a college, coming forth with a sound mind, deeply imbued with useful knowledge, and a hale constitution, invigorated by manly exercise, whose cares and affections were likely to be concentrated upon home and country, and whose precepts and examples would tend to diffuse industry, prosperity, and rural happiness around him? The father's response would be, I think, an unhesitating no, to the first question; and the lady's after due deliberation, I verily suspect, would be a half articulate amen! I pretend not to the spirit of prophecy, yet I venture to predict, that many who now hear me, will live to see professional schools of agriculture established in our land, to see their utility extolled, and to be induced to consider them the best nurseries for republican virtues, and the surest guarantee for the perpetuity of our liberties. They should be established—they will be established—and the sooner they are established the better for our country.

To those who have passed to manhood, and who have made up their minds, from necessity or from choice, to till the ground, the means of improvement—of studying the principles of their business—and of becoming acquainted with the most approved and modern practices in husbandry—the opportunities of acquiring useful knowledge, are abundant and cheap. One of these means, and a valuable one, is proffered him through the exhibitions and publications of these societies. Another is the perusal of books upon agriculture and rural economy, which should form a part of social and rural li-

braries. And another facility of acquiring this useful knowledge, is afforded by the agricultural periodicals of our country, which, besides containing much that is instructive in the philosophy of farming, are a record of the best modes of practice, and of much that is new and important, in the various departments of rural and household labor. A volume of the Cultivator, of which I can speak with accuracy, contains about as much matter as five or six volumes of the popular novels of the day, and twice as much as four numbers of our literary quarterly journals. The price of the Cultivator is one dollar per annum. I verily think, that if the farmer would divide his patronage between political and agricultural journals, he would be a manifest gainer, in his fortune and in his family—would be more happy in his business, and domestic in his habits—a better manager, and a more useful citizen.

Time will not permit me to go into the details of modern improvements in husbandry. These improvements are great, and afford the brightest hopes to the philanthropist and the patriot. No one who can carry back his memory forty years, can withhold his wonder at the astonishing improvements which have in that time been made in the manufacturing and mechanic arts, by reason of the aids of science; and those who can scan the future, will have no less reason to rejoice, in the anticipated advantages which are in prospect, from an improved culture of the mind and the soil, consequent upon a better system of education to the agricultural population, and the general diffusion of useful knowledge, which is likely to result from it.

I will merely further remark to the farmer, that if he would prosper in his business, he should study, practice and adopt, the better system of husbandry which is abroad in the land, and which has already greatly profited thousands, so far as his soil and circumstances will permit;—that he should drain his wet lands, economize his manures, and apply them with judgment;—to cultivate well, what he does cultivate;—to alternate his crops;—to extend his root culture; to increase and improve his stock, as the products of his farm will permit;—and to substitute fallow crops for naked fallows.

In conclusion, gentlemen, permit me to express my hearty wish, that success and honor may crown your efforts to improve the condition of your country, industrial and moral, associate benefits almost as intimately connected, as cause and effect—and that you may long live to enjoy the blessings which are promised to him who truly loves his neighbor, and reveres and worships his God.

CORRESPONDENCE.

Tropical Florida.

[Lat. 24°, 48' N. long. 80°, 55' W.]
Indian Key, T. F. 12th Nov. 1839.
[Ther. 80° Fahrenheit.]

To JESSE BUEL, *Editor of the Cultivator*,
Albany, New-York.

SIR—As none of the Cultivators for the last year were received until all the numbers came together a few days ago, via the remote part of Key West, I could not, of course, previously observe in your February No. at p. 187, the paragraph in which my name is connected with opposition to the Mulberry-selling speculations and silk producing calculations of the Northern States. Permit me then to repeat, that my written opinions of the silk business in the Northern States, are conformable to your printed opinions on the same subject. I have always maintained, that in those wintry regions this rural industry can only become a collateral branch of common farming—a temporary occupation of household industry—in short, what it has been in Connecticut ever since its first introduction, fifty years ago. I have, therefore, always sustained the positions, that the advantages of the extension, over the Northern States, of the combined propagation of Mulberry plants and the bona fide production of raw silks, should not be calculated on the false hypothesis that this new branch of rural industry would yield greater profits than the common products of common farms; but that the benefits should be estimated from the important facts, that the Mulberry trees can best be grown on the poorest, and otherwise least productive, lands; and the raw silk can best be produced by the feeblest, and otherwise least productive, hands.

As a temporary collateral branch of farming, then, I admit that it may be desirable to employ six weeks annually in the production of raw silk by the feeblest hands on the poorest lands of even the Northern States. But the agricultural statesman for the whole country, will readily convince himself of the relative superiority of the old Southern States for the profitable production of raw silk as a collateral branch of their planting industry. The great superiority of the old Southern States over the old Northern States, and even over the new Western States, is easily shown by the irrefutable facts, that their vegetating seasons are much longer; that their poorest lands are much cheaper, and that their unproductive lands are more numerous and more controllable. In other words, it can be thus demonstrated that the old Southern States can afford to sell raw silk at two dollars and fifty cents per pound, and yet gain five dollars per acre net profit for their poorest, unproductive lands, and will also gain fifty cents per day gross wages for their feeblest unproductive hands. As a temporary collateral branch of planting, then, I contend it will be much more desirable to employ twelve weeks annually in the production of raw

silk by the feeblest hands on the poorest lands of the old Southern States. But, Sir, in relation to the permanent production of raw silks in the United States, the most important facts which should again be presented to the whole community, are those irrefutable facts by which I have long since demonstrated the *superlative superiority of South Florida for the profitable production of raw silk!* 1. That it enjoys a tropical climate peculiarly favorable to human health and to vegetable growth the whole year round. 2. That the *morus multicaulis*, being a tropical plant from the Tropical Philippine Islands, has hence returned to its native climate on the tropical Florida Keys. 3. That in this tropical climate, the Manilla Mulberry is an evergreen tree, which does reproduce its bulky leaves, and which can be propagated by its numerous buds in every day of every year. 4. That hence, in this tropical climate, the silk worms can be fed, and their silk cocoons can be spun on every day of every year. Very respectfully, your obedient servant.

HENRY PERRINE.

P. S. I still repeat that the *morus multicaulis* is a splendid humbug; but I shall rejoice at its continuance, provided its energies be exerted in the only district of the Union where the greatest possible number of plants can be propagated in the least possible time, and where the greatest possible quantity of silk can be produced at the least possible expense. If only ten of the wealthiest speculators had been established two years in these Florida Keys, the whole United States would have been roused by their clamorous proclamations of certified facts of their infinite superiority for the continual propagation of Mulberry buds, for the continual reproduction of Mulberry leaves, and consequently for the continual feeding of silk worms, and for the continual production of raw silks!!

Comparative contrast of the opposite climates of Southern Mississippi and Southern Florida.

1838.—Natchez, Miss.—Clear days, 43; cloudy 192; rainy 93; foggy 27; hazy 5; snowy 3; sleety 2.—Hottest day 94°; coldest day 18°, or 14° below the freezing point of Fahrenheit's scale.

Indian Key, T. F.—Clear days 314; cloudy 15; rainy 36.—Hottest day 90°; coldest day 50°, or 18° above the freezing point of Fahrenheit's scale.

Add for Indian Key the fact, that the greatest change in one month was 33°, and the greatest change in one day was 14°, and you will readily conceive the incontrovertible reality, that Tropical Florida enjoys the most delightful weather, with the most healthy climate in the whole United States.

You know that the slanderous charges of deadly sickness against South Florida are solely derived from the detracting reports against the only port of Key West. But supposing that near the southwestern extremity of this reef at the remote island of Key West, the village itself should be a sickly locality at all seasons of every year; nevertheless, you will perceive that it is separated by seventy-eight miles of latitude and longitude in the open sea from the nearest point of the healthy mainland at Cape Sable! HENRY PERRINE, M. D.

at Indian Key, Tropical Florida.

Manufacture of Maple Sugar.

Rutland, Vt. 24th Nov. 1839.

To THE CONDUCTOR OF THE CULTIVATOR,

Albany, New-York.

SIR—Understanding that Mr. Henry Mussey, of this town, is a competitor for a premium offered by you in the month of April last, "for the best sample of ten pounds of maple sugar, produced by household process," the arrival of whose sample was announced in the September number of the Cultivator, and that his standing in this vicinity for reputation, truth and veracity, should be vouch'd for by some person known to you, I have great satisfaction in giving my testimony in behalf of Mr. Mussey, as being one of our best farmers—one of our most substantial and reputable citizens—and whose representations as to his method of manufacturing the sugar in question, or, indeed, upon any other subject, would receive in this community, the most implicit credit.

I am, very respectfully, your obd't serv't,
JESSE GOVE.

Rutland, Nov. 26, 1839.

MR. JESSE BUEL—SIR—As a competitor for the premium offered in the April number of the Cultivator, sometime in August I sent your deceased father ten pounds of maple sugar, the receipt of which was acknowledged in the September number, with a request for the mode of manufacture and the estimated expense, which I will endeavour to give.

1. Scald the buckets clean.
2. Boil the sap as soon as possible after running from the tree, in the old burning process, that is, in fireplaces or between logs, (although we endeavour to burn as little as we can, and wash the kettles once a day,) down to thin syrup.

3. Settle over night, and draw off clear.
4. Cleanse with a pint of milk to 50 lbs. sugar, and sugar off in the common way, leaving it so thin that some molasses shall stand on the sugar: and,

5. After drawing molasses twenty-four hours through a hole in the bottom of the tub, (our tubs hold from 100 to 300 gallons,) spread a double cloth over the top and lay on clay about two inches thick, of the consistency of thick milk porridge; after three or four days, take off the clay, and if the sugar is not sufficiently

white, wet up the clay and lay on again, which may be repeated till the sugar is as white as loaf, (the sample sent was clayed only once.) This will whiten about one-third of a tub, say two and a half feet deep, which may be taken off, and the rest clayed as before.

I estimate the expense of raw sugar at five cents per pound, and of clayed at eight cents, in good seasons like the last, when from 300 trees we made 1500 lbs. raw sugar.

If the premiums in the April number are offered by any society, please to present the sugar to them; if they are only the private offers of your deceased father, present it to his afflicted family, as a testimony of the high respect in which the name of Jesse Buel is held by myself, as well as the agricultural community.

Respectfully yours, &c.

HENRY MUSSEY.

Durham Cattle.

It has been conjectured by many, that the apparent high prices at which the "Improved Durham Short Horned" cattle have been held, could be maintained but for a few years. This has been the burthen of the song of those who were desirous of possessing them, but were unwilling to pay but a trifling sum over the price of the common cattle of the country. And if perchance a farmer who has a little more enterprise and liberality than his neighbors, should venture to purchase a bull of an improved breed, at one or two hundred dollars even, he is pretty sure to incur the ridicule and sneers of his less enterprising neighbors, instead of encouraging him and benefitting themselves by the introduction of a superior breed of cattle.

This feeling, I am happy to say, is losing ground, and the importance of improving our cattle is more apparent. Several Durham Bulls were purchased in this vicinity last spring, ranging from one hundred to four hundred dollars each, and taken into Vermont, which I am informed, cleared themselves the first season. This is as it should be.

Now, I will venture to assert, that the owners of the heifer calves from either of these bulls, and a common cow, could not be prevailed upon to part with one short of twenty-five to thirty dollars, when they would jump at five dollars for one of the common breed.

Some have been patiently waiting, with an idea that the country would soon be filled with them, and the prices would fall; but from some late sales made by auction in this country, as well as in England, it is feared they will have to wait some time longer, before they will be gratified with an opportunity.

In a late (October) number of the "Farmers' Magazine," I observed the sales, in September last, of the stock of three noted breeders. The first was the stock of the Earl of Carlisle, at Castle Howard, near York. The attendance of gentlemen from all parts of the country was very numerous, and the sale excited much attention amongst breeders, graziers and others from the well known superior quality of the stock always raised at Castle Howard.

The prices paid for cows and heifers, forty-seven in number, ranged from 20 to 320 guineas each, and averaging \$310. There were twenty-four bulls and bull calves, which ranged from 16 to 120 guineas, averaging over \$226 each. The whole proceeds of the sale were near \$20,000.

The second sale immediately after the above, was of Mr. Henry Edwards, of Market Weighton, and the sales effected, (above £50,) were for eight cows from 61 to 300 guineas each: averaging over 110 guineas, and ten calves from 20 to 100 guineas, averaging over 39 guineas each.

The third sale was the property of John Colling, Esq. of White House, near Gretna Bridge, and, says the writer, "a more splendid display of these beautiful animals has rarely been witnessed. The animals were of a superior order, both as regarded symmetry and condition, and the prices will fully prove their superiority." Twenty six cows, heifers and calves, ranged from £18 to £200 averaging £71 each. Seven bull calves ranged from £13 to £22, averaging over £33 each.

From the above sales, we are led to believe, that the "Improved Durham Short Horned" cattle maintain pretty fair prices at the present time in England; and in this country, this description of stock appears to be still on the rise. This is owing to the great demand for thorough-bred animals in all the Western States, and the present impossibility of supplying that demand by the natural increase, of the number of animals now in this country.

At a late sale of Wm. A. Warner, Esq. of Kentucky, his bull Frederick, was struck off at \$1,625. Several of his cows sold at from \$900 to \$1,100.

A sale of Durham Short Horned Cattle recently took place at Powelton, Pa. where eight cows, heifers and calves were sold at auction, averaging \$458 each; the highest price paid being \$610, and the lowest was for a calf only ten days old, at \$200.

I am also advised by a late number of the "Franklin Farmer," that Mr. L. Sherley, of Louisville, Ky. lately sold at private sale, his imported Durham Bull "Velocipede," at the high figure of \$1,500, after taking premiums in plate the past fall, of the value of \$105.

The same gentleman also sold his imported roan calf, "Liverpool," for \$1,000. He was exhibited only at the Jefferson County Fair this fall, where he carried off the \$20 premium, as the best yearling calf.

It is now about thirty years since the Messrs. Col-

lings' sale of Durham Short Horned Cattle took place in England, when the famous bull Comet, was sold under the auctioneer's hammer, for 1,000 guineas, and some of their cows sold from 300 to 410 guineas.

That these extraordinary high prices will be maintained, I will not contend; but that they will command fair prices for some years to come, will be readily admitted by those who are best acquainted with their merits.

C. N. BEMENT.

Three Hills Farm, December, 1839.

Devonshire Cattle.

Mr. BUEL—Sir—It appears to be the general opinion among the northern farmers, that the Durham cattle are not adapted to the climate, that the pastures are not sweet or rich enough, and that the winters are too cold and severe. Why would it not be a good plan to buy some other breed that will keep on short pasture and stand our severe winters?

The Devonshire cattle I think will suit those persons whose opinion is against the Durhams. I do not say that the Durhams will not do, for I think I have seen as fine cattle of that breed in some of the northern countries as will be found: they were not entirely full blooded, but were bred up from the native stock, which is the only true way to get a good breed of cattle adapted to our climate.

Our native cattle are hardy and can stand our cold and rigorous winters, and their produce from an improved bull, will, I think, do better than the pure bloods.

The Devons are said to be a hardy race, are classed as middle horns, and celebrated for their beauty, activity at work, and aptitude to fatten. They are of a mahogany colour, white horns, the nose and circle around the eye yellow.

For working cattle they are allowed to be the most active, having a quick walk, and in a light cart or wagon will trot at the rate of four or five miles per hour. This is not requisite, but it shows that they can use their limbs to good advantage. I have seen a yoke of them that drew a large load of grain nine miles, as quick as a span of horses would.

The disposition of the Devons to fatten stands almost unrivalled, and in a given time, with less food, they will acquire more flesh than most any other kinds. They are by no means a large sized cattle, the bulls are smaller than the ox, and the cows still smaller than the bull.

The cows for milk are considered inferior to some other breeds, but the quantity they give is richer in proportion to that of other breeds, and I believe were they thoroughly tested, they would rival almost any other breed in quantity and quality.

I have seen on the farm of C. N. Bement, at Albany, some fine specimens of this breed, also some half Devons, and half Durhams which were really beautiful cattle. The half bloods resembled the Devons in color and form, except being broader across the hips than the pure Devons, thus making up that deficiency which has so long been an objection by the amateurs of fine stock.

Mr. Rotch, of Butternuts, has imported within a year a couple of fine heifers of this breed, and I think much credit is due him, as they were procured at great expense to benefit the stock of this country.

Some other gentlemen have fine specimens of this stock, and it is gratifying to look into their barn-yards, and see the improvement that has gradually crept in of late years.

Public opinion has great weight with many people, and when a prejudice is once formed it is hard to overcome it. I am in hopes, however, that people will soon begin to think and act for themselves, and through the medium of agricultural papers let the world know what they have done, and by so benefitting one another, we may soon begin to look up and mend our old ways.

PHILIP.

December, 1839.

Rohan Potatoes—China Tree Corn.

Gustavus, Trumbull co. O. Nov. 13, 1839.
J. BUEL, Esq.—Sir—When in New-York last spring, I purchased of Mr. G. Thorburn, a few Rohan Potatoes, and on the 29th of April planted two of them, weighing eleven and a half ounces.

I cut them into 30 pieces, leaving but one eye in each piece, and planted them in 12 hills, 3 feet apart each way. On the 16th of October, I dug from those 12 hills 175 potatoes, measuring two bushels, heaped measure, and weighing 118½ pounds.

I cannot say that any extraordinary means were used either in planting or hoeing. I put manure in the hill before planting, and hoed them three times, and I believe had the season not been unusually dry, the product would have been greater. As it is, if you think the notice of it worth a corner in the Cultivator, you are at liberty to give it.

I planted an ear of the China Tree Corn on the 15th of May, but it did not get ripe. I am not, however, entirely disengaged, as the Dutton Corn planted at the same time, in the same neighborhood, was also injured by the same early frost. The superior appearance, extraordinary growth, and great number of ears to the stalk and hill, induces me to think of giving it another trial.

I am fully persuaded, that if it will ripen in this climate, it will yield more abundantly than any other kind of corn.

Respectfully yours, &c.

GEORGE HEZLEP.

Staples's Patent Straw-Cutter.

Is a new invention on a new principle, for which the subscriber has received a patent.

Convinced of the great economy in cutting up every description of rough feed to be fed out, and the importance of a good and efficient straw-cutter to every farmer, the subscriber turned his attention to inventing one for his own use, free from the many objections to the various implements of this kind, and he has succeeded in perfecting a machine which is pronounced by good judges to be the end of improvement in these things. It is as perfectly simple, durable and efficient a machine for cutting up every description of rough feed, as can be asked; the wear of any part will not prevent its doing its work well. This machine has two knives, which from a drawing motion peculiarly adapted to cutting, will cut well without that keen edge that all other straw-cutters require, and will therefore want less grinding or sharpening, and for this purpose they are very easily taken off and replaced, as no screws are attached to them, and no nice fitting is required. There are two bed shears which support the feed on each side as it is cut by the knives, and not a straw will ever escape uncut, or be bruised or mashed off, let the knives be dull or sharp. These machines require little power, and are easily made or repaired by any common workman.

To try how much could be cut in a given time with one of these machines, one hundred pounds of sheave oats were weighed out, and they were reduced to pieces in two minutes and a half.

These machines are manufactured at the subscriber's shop, near Lynchburg, Va. price \$20.

To persons disposed to purchase the right of making and vending these machines, they offer great inducement, as an examination of them will not fail to induce every one to purchase who is in want of a straw-cutter; and to introduce them abroad, the rights for the different states or counties will be sold low; and for the same reason, where three or more machines are ordered, a considerable discount will be made, in proportion to distance, and the machines delivered in Lynchburg.

For further information, address the subscriber at Lynchburg, Va. WILLIAM A. STAPLES
Lynchburg, Nov. 25, 1839.

Rohan Potatoes.

Auburn, Nov. 14th, 1839.

JESSE BUEL—Dear Sir—While reading the Franklin Farmer, (a paper published at Frankfort, Ky.) I observed the following notice or inquiry:

"ROHAN POTATOES.—If any of our readers have been successful in the cultivation of this root, we should like to hear from them. We got a very large one from Boston, which we planted with some of our friends. We planted two hills in excellent soil, worked them well, but did not get a tuber as big as a pin head. One of our friends, from one hill, got five little things, neither as big as a partridge's egg; while he says, 'our common potatoes yielded prodigiously, the finest and largest we ever saw.'—Franklin Farmer, Vol. III. No. 11, p. 83.

With respect to this, I should like to ask, (if this should chance to meet the eye of the Franklin Farmer,) whether there might not have been some mistake in the kind of potato? (as there probably has been here in respect to the Chinese tree corn,) or if the reproducing qualities of the potato might not have been injured in its conveyance from Boston to Frankfort? for it is generally believed that good old Kentucky is celebrated for its fertility of soil.

Last spring I purchased four Rohan potatoes from Walker's seed store, Schenectady. These, with a few other small ones given to me by Prof. Jackson, of Union College, I planted about the middle of April, and dug from them, the first of October, eight and a half bushels. From one of them, which was kept separate from the rest, I dug two bushels, the tubers in general very large, none of them as small as our common potato; it was said by a gentleman who saw them, that they were larger and fairer than most exhibited in New-York. The potato I planted had twenty-two eyes, I put them in eleven hills, three feet apart.

A gentleman residing in this vicinity raised three bushels from one potato, sent to him by a relation in Rochester.

I should also, in connection with this, like to ask, whether it is profitable to spade up a garden in the fall and let it lay till spring, or wait till spring, then to do it? And whether a difference of treatment should be used on a dry sandy, and a dark clay, soil? The reason of my inquiry is this—while spading a week or two since a garden of dry, sandy soil, I was asked why I did it now? I answered, it was generally the custom to spade a garden in the fall. He said he did not believe the custom was in accordance with good policy, and did not believe that those who acted thus could give a reason for it to sustain the position. I should like, furthermore, to ask, whether it is preferable to put manure (not entirely fermented,) on the ground after spaded in the fall, and let it remain till spring, or put it on in the spring?

Should this meet your approbation, an insertion in your paper would be exceedingly gratifying, with information respecting the inquiries.

Respectfully yours,

HENRY H. HOPKINS.

Ruta Bagas and Sugar Beets for Hog-Feed.

About the 15th of November, 1838, I shut a pig by itself that weighed 82 lbs, and fed it on boiled ruta bagas,

with about a peck of bran mixed with a bushel of the ruta bagas. When it had been fed on this food 58 days, it was weighed and found to have gained 60 pounds.—I afterwards, during the winter, fed the same pig and other hogs, for a few days, with ruta bagas boiled and mixed with bran, the mixture allowed to get pretty sour; and they increased in weight very slowly. I then fed the same animals with sugar beets boiled and mixed with bran as were the ruta bagas, and allowed to sour; they ate considerable of it, but did not devour it greedily. After feeding them with this food a few days, I perceived they lost flesh, and probably would have died, if the same food had been continued; yet I have no doubt either of these roots will fatten hogs very well if fed before they sour. The principal part of the nutritious properties of these roots consists of sugar, and consequently the first fermentation changes it to alcohol and carbonic acid gas.

S. W. FOSTER,
of Scio, Michigan.

Albany, Nov. 20, 1839.

EXTRACTS.

[From the *Genesee Farmer*, Nov. 30.]

Caption to Postmasters.

We find it necessary to republish our exposition of the conduct of J. E. Force, as we learn that he is flooding the country with his spurious *Prospectuses*, in the hope, probably, that they will fall into the hands of many persons who will not see our statement, and he thereby be enabled to obtain *advance payments* on the credit and reputation of the genuine *Genesee Farmer*. It therefore becomes necessary to give our expose a more extensive circulation, that the friends of the *Genesee Farmer*, and the public generally, may be on their guard against the gross imposition attempted to be practised upon them, in thus sending out (with my papers in some instances) a *Prospectus* purporting to come from my office. As a specimen of the views taken of the matter, by those who understand it, we publish the following extract of a letter from one of the most distinguished advocates of the Agricultural interest in Western New-York. He says:—"What an infamous scheme your letter has exposed. I am glad they started so early, as I think your exposure will put on the cold water effectually for a time. The project will probably revive again in some form, but hardly, I imagine, in one so rascally. You may use my name in any way you think best, to counteract the scheme. I should have expected nothing different from Goodsell; and Force, I think, could have been only a tool. I have read your expose, and, though pointed, I do not think the language any too strong to properly characterize such conduct. Connected with the *Genesee Farmer* for a year," Force says. "Some years since, at a show in New-York, a company of gentlemen and ladies were admiring a beautiful volume—its printing, binding, &c. when a miserable fellow came up and claimed the credit of its execution. The assertion was doubted, and when pressed to tell what part of its execution belonged to him, he stammered forth at last,—"I made the paste!" Such is pretty much the part Force has performed in the office of the *Genesee Farmer*."

Gross Imposition.

I have just seen a *Prospectus*, headed "Genesee Farmer Extra, 1839," for what purports to be a "new series" of the "Genesee Farmer,"—"N. Goodsell and J. E. Force, editors, and J. E. Force, proprietor,"—large number of which, I am informed, have been printed in this city for circulation abroad. Justice to the public, as well as a regard to the good name of myself and paper seem to render it obligatory on me to caution the public against this spurious *Prospectus*, which has been got up by a young man not yet of age, who has been employed in my office, for a year past, to keep my accounts and mail my papers. Had not Force and Goodsell, however, placed the name of the *Genesee Farmer* at the head of their *Prospectus*, thus giving it the character of an Extra issued from my office, and made statements which are altogether destitute of truth, I should not probably have deemed it necessary to have noticed their efforts, notwithstanding the dishonesty manifested in filching the name of my paper, and the perpetrator at the same time appropriating to himself the confidential knowledge of my business, books and correspondence, while yet in my employ. A simple statement of facts will serve to show whether the public will be likely to receive in return for their money, a paper of the high character of the present *Genesee Farmer*, or even any paper at all for any length of time. J. E. Force, who represents himself as proprietor, claims "a year's connection with the *Genesee Farmer*," from which the public might infer that he was or had been either one of its editors or proprietors. It is proper, therefore, to state the extent of his "connection with the *Genesee Farmer*," which consisted in his being employed in the office the last year to pack and carry the papers to the Post-Office at a salary of five dollars and a half a week. This Mr. Force, in an introductory note to the *Prospectus*, which he acknowledges was not written by himself, is made to say that "he has engaged the editorial assistance of those who were formerly its editors, together with a number of its contributors." And the same thing is said in the body of the *Prospectus* in still stronger language, as follows:—"The new series of the *Genesee Farmer* will have the editorial powers of

gentlemen already distinguished in this cause, and long engaged in the editorial department of the old series, and thus offer the best security in return for the patronage of the public."

The representation here distinctly made is that the spurious *Genesee Farmer* is to be conducted by the editors of the *present Genesee Farmer*. Indeed the pledge that it is to be under their control is given as "security" to the public that the paper will be worthy of their patronage. The public can judge of the value of this "security," when they are informed that the statement is entirely *destitute of truth*—and that no person connected in any way with the editorial department of the *Farmer* for the last six years, has been or can be engaged to aid the proposed dishonorable attempt to transfer to an irresponsible concern the reputation or patronage obtained by nine years indefatigable service in the cause of Agriculture by the present conductors of the *Genesee Farmer*. It is, however, proper to say that the "N. Goodsell," whose name figures in the *Prospectus* with that of J. E. Force, was employed as a writer for the weekly *Farmer* during the first years of its existence; but he six years ago, without a moment's notice, or a word of difficulty occurring between us, broke off his engagement, and started an opposition paper called "Goodsell's *Genesee Farmer*," which proved an entire failure, as he did not succeed in withdrawing from my paper either its reputation, correspondents, friends or patronage; and the *base attempt*, as it was considered by all familiar with the circumstances at the time, proved an utter abortion, the paper having never completed its first volume. The public will be able to judge from this statement of facts in relation to "N. Goodsell and J. E. Force," whether their *Prospectus* is worthy of credence, and whether they will be likely to receive a paper worthy of their patronage, or even any paper at all for any great length of time, for such payments as may be remitted in advance for the counterfeit *Genesee Farmer*.

The contemplated union of the *Genesee Farmer* and *Cultivator*, (occasioned by the lamented death of Judge BUEL,) has, so far as has come to our knowledge, received the warm approbation of the friends of both papers. It may, however, not be amiss to caution the public against any other attempt which may be made to build up a spurious paper on the reputation and character of the *Genesee Farmer*, and thus defraud and disappoint the public, as we learn that there are other persons in this city who are prepared to make the attempt in case of the failure of the above named persons.

LUTHER TUCKER.

Postscript.

Since the above was written, I have learnt that Force has sent off to the West large numbers of these *Prospectuses* with the November No. of the monthly *Genesee Farmer*, the mailing of which he has delayed probably for that very purpose. Postmasters and others should therefore be on their guard against the *Prospectus* of Force and Goodsell, as it is not unlikely that they may find some of them done up in my papers. It may be proper also to state, that Force now assures me that he shall not issue the proposed paper, which I presume will prove true, as he must have relied upon anticipated *advance payments* for the means necessary to go on with it.

Second Postscript.

Force, who mailed a part of the November Monthly *Farmer*, was directed to put into each parcel a *Prospectus* for the *Cultivator*, but we have great reason to fear, from the following letter, that instead of sending our *Prospectus*, he sent his own, with such of the Farmers as he mailed:

Milan, O. Nov. 26, 1839.

"Mr. TUCKER—In your last No. of the *Farmer* you state that you will forward with each package a *Prospectus* of the united paper of *Farmer* and *Cultivator*.—As yet I have received none, but have received one of the *Genesee Farmer* to be conducted by Messrs. Force & Co. Now this work is new entirely to me, and I know nothing about its proprietors, and cannot speak in favor of it. I wish therefore you would, on the receipt of this, send me immediately two *prospectuses* for the united paper, so that I can solicit subscribers for it, and oblige yours, &c."

[From the *Farmers' Register*.]
On Fattening Hogs, by cold-soaked and ferment-ed food.

You complain very justly, I think, that many of your first contributors have grown weary in well doing; in other words, that their communications have greatly fallen off in point of numbers. Although I myself am unconscious of being one of the culprits, I determined immediately upon reading your remarks, to act as if I really was one, and felt anxious to evince my repentance by forthwith inditing to you an epistle of some kind or other; but could think of nothing, at first, that appeared worth communicating; luckily, however, in the midst of this quandary, I picked up at second hand, from a friend, something in regard to the mode of fattening hogs, which seems to be well worthy of notice.

First, however, I must tell you, that having, for a year or two past, enrolled myself in the fraternity of root-steamer for stock, (horses and sheep excepted,) my own experience is not yet sufficient to report to you any result of trials made by myself. I must farther confess that, as a novice in the steaming business, I still retain somewhat of that incredulity which I always feel rela-

tive to the benefits of any practice, when they appear to me so exaggerated as those do that are generally ascribed to the steaming process. But being open to conviction, and utterly condemning the old and common wasteful method of fattening our hogs, I was much gratified to hear the account which I will now give you of the mode practised by some gentleman, whose name I forget, in King & Queen or King William.

One or more casks or tubs are nearly filled with alternative layers of chopped cabbages or roots, and broken ears of corn. Enough boiling water is then poured into the vessels, to cover the food. This is suffered to stand about twenty-four hours before it is given to the hogs, by which time some fermentation takes place, if the fattening process is commenced as early in the season as he commences it, which I understand he does long before frost. A constant supply of this food is given until a very short time previous to the hogs being killed, during which they have corn alone, which is generally deemed necessary to harden their fat.

By this method we may save the expense of steaming apparatus of every kind, such as have been heretofore recommended in our agricultural papers. It is true that some of these cost very little compared to the advantages derived from them; but this little, even in the cheapest that I have seen mentioned, is worth saving, if it can be done by some contrivance still cheaper, and preferable on other accounts, as the one which I have just described, appears to be.

I am gratified that I have it in my power to give you the foregoing information at this particular time; for I have long been convinced that we should probably save at least half the expense of fattening our pork, if we would commence doing it by the first of September, or even sooner, and give much less corn than we generally do. To postpone putting up our hogs for the sake of the acorns and chinkapins that they may be able to find by incessant travelling about in search of them, is as complete an illustration as I have ever known of the old proverb,—"penny wise and pound foolish;" since to say nothing of the notorious fact, that *hogs especially*, fatten much faster in warm weather than in cold, and when they can fill their bellies without having to travel miles for the wherewithal, (being the laziest animals upon earth, except the gluttonous man, and his prototype, the quadruped called the sloth,) more of them are lost by theft, if suffered to run at large, during the nut and acorn season, than would pay, twice over, the whole expense of feeding them in pens with food that cost us little or nothing, except the labor of collecting and preparing it. Even that portion of this stock which we call "*out hogs*" could probably be kept much more economically, if not suffered to run almost wild for half the year; and were supplied with food by their owners, instead of being left to supply themselves. As they are commonly managed, we may truly estimate the annual loss, in most cases, at nearly or quite half of the whole number; for many are killed for trespassing on our crops—starvation during three-fourths of the year, having taught them to be thieves; whilst a still greater number are stolen in the fall, after they get a little flesh on their bones, for reason which I once heard alleged by an old negro in extenuation of the practice of stealing them, that "hog meat was so miserable sweet his fellow *servants* could not help stealing it."

Hoping that you will deem this new process for fattening hogs worth publishing, I remain, dear sir,

Yours very sincerely,

JAMES M. GARNETT.

August 31st, 1839.

Chinch Bug.

To the Editor of the *American Farmer*:

In the last Farmers' Register there is an extract from the *Genesee Farmer*, in which the "Chinch Bug" is described as peculiarly a southern pest originating in the woods, from which it spreads in every direction, attacking indiscriminately wheat, corn, and indeed the most of the cultivated grains and grasses."

The writer of this communication is correct in some of his position; in others he is not.

The Chinch Bug has invariably first made its appearance in the wheat crops in this section of the country, and in all others that I have heard from. From this fact some of the most intelligent farmers in this section of the state have come to the conclusion that the Chinch Bug originates from the Hessian Fly, as you always discover them in our wheat fields near the ground where the Hessian Fly first makes a deposit of its egg.

The farmers, some thirty years since, in Orange county, in this state, had to abandon the seedling of wheat for two years, which I consider a conclusive fact, that the Chinch Bug must originate from the Hessian Fly, as all those who are acquainted with the history of the former, must know that the mere abandoning of the seedling of wheat would not have prevented the reappearance of the bug unless they originated from the fly. The bug was never known to make its appearance in any other than the wheat crop: it was never seen in this section of country until the Hessian Fly made its appearance in our wheat fields, which is another fact showing conclusively that they must originate from that insect. The rye crop is the only grain which is exempt from its ravages, at least my experience bears me out in the assertion. I seeded a field in oats, wheat and rye, the last season, the oats and wheat were injured by the bug, but they did not molest the rye; they would march around it, but would not molest it.

The same writer says, "though provided with wings,

they seldom used them, and their disappearance is as sudden as their appearance."

This is not the fact in their history in this part of the country. Some here have asserted that they would take flight from our fields in July and August, and a new crop of them would come in September; but this has not been their history this season—they make their appearance in our wheat field the last of May, and the first of June, and continue therein and in our oat fields, until the grain is cut and secured, and they then march with all their forces and commence their attack on our corn-fields, where they continue until the cold weather commences, and then take flight to the woods, though you may discover them in our corn-fields sheltered in the boot of the stalk in the depth of winter, yet they rarely survive the winter. I have discovered them in July taking flight from our wheat and oat fields, and you may see thousands and millions flying to the woods, from which I am under the impression they never return, but they leave a new generation behind, which are more destructive than their progenitors. No person can have the faintest idea or conception of the ratio of their increase unless they study their history and movements. At this time there are myriads in our corn-field attached to the stalk, and they shelter under the boot or shuck of the stalk, and there multiply beyond conception, hundreds perhaps thousand attached to a single stalk.

Some allege that the Chinch Bug takes shelter in stumps and broom sage, or old trees, during the winter, and commence their operations as soon as warm weather takes place in the spring. To prove beyond controversy that the Chinch Bug does not originate in this way in our wheat fields, I have known fields that had not a stump or any thing in them to protect them, and the wheat was very much injured by them; and in fact our tobacco land is most generally seeded in wheat, where there was no appearance of a Chinch Bug; you might discover them as abundant and as destructive in lands of that description as you would in any other field. As far as my observation extends, (and I have been examining into their history for twelve months) this insect perishes during the winter months; this I know to be fact, as I seeded a field in oats this last spring, which was in corn last year, and examined minutely thousands of corn-stalks which had stood in the field during the winter, and you might discover thousands that had perished. I had the corn-stalks carefully collected and burnt, and I did not see a Chinch Bug in the field. You might discover the chinch in tobacco fields, entirely remote from any other field, and surrounded by woods, which was seeded in wheat, and I am told that the Chinch Bug was very destructive.

The only alternative left for farmers and planters of this state, and all other districts of country, to rid themselves of this truly alarming and formidable enemy, is to abandon the seeding of wheat for two or three seasons, as I am confident it is the only plan by which we can subdue this insect. It is awful to reflect upon the consequences that must ensue to this portion of the union, if the ravages of this insect are not stayed. Notwithstanding the most propitious season which the farming community have enjoyed for 20 years, we find since the fodder has been gathered and the tops cut, the corn crop has been seriously injured.

Whether the position which I have taken is correct, that the Chinch Bug has its origin with the Hessian Fly, remains for time to develop. This is the conclusion which some of the most intelligent part of the community have come to. I cannot in all my researches and examinations and inquiries, find any other cause by which this insect can come into existence.

JAS. W. JEFFREYS.

Red House, N. C.

The Chinch Bug and Hessian Fly.

Red House, N. C. Oct. 16th, 1839.

Mr. EDITOR—A writer under the signature of Agricultor has replied to a communication of mine published in the American Farmer relative to the Chinch Bug.

"Agricultor" wishes to know my meaning of the word "progenitor," as used in my communication. My meaning was this: after the Chinch Bug comes into existence, it produces a new race, which in a short time arrives at sufficient maturity to take wing and fly in swarms to the woods; and that those left behind are more destructive in their depredations than those who thus take wing. Their habits are very much like bees; they are very industrious, and are incessantly sending out a new race, or new swarms; those that are left are more destructive on account of their incapacity to escape. All those who have studied their movements and habits, and watched the various stages through which they pass, would confirm the position I have taken.

Agricultor says: "and if so, they say it presents a very anomalous case in the natural history of animals, to wit, that of two very unlike parentages producing similar offspring."

In reply to this part of his communication I will introduce a new race of the insect tribe to prove that the insect does undergo various changes, and that unlike parents do produce similar offspring. Agricultor may think it strange and contrary to the order of nature that those large white grub worms could be transformed or turned to grasshoppers. But such is the fact. A gentleman of highly respectable standing in this country, (no doubt he was philosophizing like some of the Agricultor's neighbors) who caught one of those long white cut worms and placed it in a box with some loose earth, and after it was confined for some days, he examined

it one morning, and found it had changed or produced a grasshopper. Is it more strange for a cut worm to be transformed to a grasshopper, than that a Hessian Fly should deposit an egg which should produce a Chinch Bug? Grasshoppers produce grasshoppers, and Chinch Bugs produce Chinch Bugs.

Another case—How does Agricultor account for the Tobacco Fly depositing an egg on our tobacco, and after some hours by the heat of the sun, the egg produces a cut worm nearly as destructive in its operations as the Chinch Bug. This last case is well known to every planter of the south who cultivates tobacco.

It is more strange that the Hessian Fly should deposit an egg in the boot of the wheat and be brought into existence by the heat of the sun, than that a Tobacco Fly should deposit its egg on a tobacco leaf, and that egg should be transformed by the same cause to a cut worm? I could adduce other cases in the insect tribe to convince Agricultor and his sceptic neighbors of *unlike parentages* producing similar offspring.

I will now reply to the first part of his communication.

Agricultor has called it a "novel discovery, and if verified by subsequent investigators of the mysteries of nature, the approach of a new era in the natural sciences may be involved."

I can assure Agricultor that the idea of the Chinch Bug being a descendant of the Hessian Fly is not new, as it can be traced as far back as the year 1783. About this period the battle of Guilford, N. C. occurred. There is a gentleman now living in Orange co. N. C. who is venerable on account of his age and great worth, who well recollects that when the British army moved through that county, there was a part of the army which were called the Hessian soldiers. Immediately after this event, perhaps that year, the Hessian Fly or Hessian Bug destroyed their crops of wheat. They believed and do believe to this day, that those soldiers left the flies or bugs as they passed through the country. The Chinch Bugs continued to destroy their crops of wheat for several years, until they were compelled to abandon the seeding of wheat. This aged gentleman says they finally disappeared after four or five years.

After a period of 56 years the Chinch Bug has appeared in the same district of country, and upon the same tracts of land.

I have no doubt that I could procure the testimony of fifty men of unimpeachable character, who believe that the Chinch Bug is the true descendant of the Hessian Fly. Agricultor may call it *old fashioned* stuff, but let him lay aside his books upon such subjects, and go and examine the operations of nature in these matters, and he will see great and strange transformations, proving that *unlike parentages* can produce *similar offspring*. I am a plain homespun man, and draw my conclusions from the operations of nature. I should have been thankful, and no doubt this portion of the country would have felt themselves much indebted to Agricultor for having given a better history of this insect, and given us his views relative to the best mode of preventing their depredations. We do not care for their genealogy—we wish to destroy them and not perpetuate their names.

JAS. W. JEFFREYS.

Of the Fallow.

(Concluded.)

After the land has been ploughed a second time, the question arises, whether the surface should be left in a rough furrow state or harrowed fine down? To this the reply is by no means difficult, since the rougher it is left, the greater is the surface exposed to the sun, rain, and wind, and, as the object is to have the surface as dry as possible before being again ploughed, the rougher state is then to be unquestionably preferred.

When the land is once dry, to have it any longer exposed, unless waiting for a shower, is useless, since the clods and crumbs can be no more than dry if they remain exposed for weeks in an arid season, for their affinities are at rest, as in paper or dry wood, decay or decomposition is prevented, and therefore no after enrichment is to be expected. If a good shower should come, it will prove of great value by falling on a dry surface, by causing a circulation, first of fresh water through the clods, and then succeeded by fresh air, as the former dessicates beyond what is chemically and mechanically retained by the soil; but when again dry, no time should be lost in turning this surface under with the plough, and bringing up a fresh one to be similarly exposed; because more advantage will be gained now, by exhibiting a fresh surface to the sun, &c. than permitting it to remain unmoved.

It is quite necessary for land to lie undisturbed after ploughing, for a certain time, before another takes place; as is the case when making bread, hay, beer and wine,* otherwise a fallow might be completed in a day, which is impossible. Now the usual period that intervenes between fallow ploughings during the spring and summer months, is from two to five weeks, which experience and the economy of a farm have decided to be sufficient and practicable; the appropriate rollings, &c. being of course applied when necessary, particularly if recently manured,† as the superficial dressings will as-

* Likewise with a fire, which requires, when endeavoring to get it up strong, to remain a time after every stirring, to allow of the requisite changes and combinations taking effect.

† Land should remain the longest after that ploughing which turned in the manure of a vegetable nature, but then

sist in the general fermentation, therefore, in the decomposition and combination of the vegetable materials with the particles of the soil.

Before the third ploughing is entered upon, a heavy roll or a light one, according to circumstances, should be passed over the field across the furrows, and this implement alone will effect, generally speaking, all the requisite pulverization at the least expense of culture & treading. This act of pulverizing displaces the previous position of the particles of the soil, and brings others into contact, thus highly favoring fermentation. If the roll be unable to accomplish the present intention, the harrows or the scarifier, or both, may of course be employed.

Suppose the third ploughing to be completed, the soil will now present to the eye and touch great improvement in its color, its state of pulverization, and in its inexhaustible moisture beneath. If turnips are to succeed the fallow, and the fourth or fifth ploughing is to be the last, then, before this takes place, the surface of the field should be reduced to the finest tilth by the harrows and roll, when the land and weather are favorable, that the seed, when sown on the subsequent plough furrow, may be deposited in and surrounded by an entire mass of close yet permeable soil, from being finely pulverized, of from six to ten or more inches in depth. This is the very object of the husbandman, because, a body of earth in the above condition is the one, experience has ever found, most congenial to the infant germination and future growth of the turnip, and which, according to seasons, will attain in consequence the limit of its development and produce.

The benefit of the fallow process may be summed up in these words: that it replenishes the soil with fresh air and fresh water, improves its powers of composition and decomposition, strengthens its affinities for the products of vegetable and animal substances, renders it easily permeable to the roots of plants, and restores, by the general pulverization, its valuable property, inherent in rich soils, the absorbing and retaining of moisture and air from the atmosphere.—*Bland's Principles of Agriculture*.

Important Facts.

We observe with astonishment and regret, the conclusive evidence which appears in every direction, that the business of agriculture does not receive the attention due to it in this country, but it is treated with absolute neglect, compared with other pursuits. This ought not to be, and the inhabitants of this country will yet learn, that they have committed a gross error by abandoning the cultivation of the soil, for less independent and more precarious modes of obtaining a livelihood.

Who has ever heard of such a state of things as now exists here? We have no soil as fertile as any that the sun ever shone upon, a country almost boundless in extent, and so cheap, that any man may purchase a farm with the proceeds of a few months labor, yet we are actually importing for consumption, immense quantities of agricultural products from foreign countries! A people, thinly scattered over a land unequalled in fertility, and exhaustless in its resources, are buying their bread, at enormous prices, from countries so overburthened with inhabitants, that political economists have feared that the earth would fail to produce sufficient to support them. Such an extraordinary and unnatural circumstance should excite attention, and awaken the inquiry as to its cause.

The fault, as we have seen, is not in the soil, nor is the country overrun with inhabitants. It is, therefore, evident that the cultivation of the soil is neglected, otherwise we should be exporting agricultural products, but it is easier to show the fact, that agriculture is neglected, than to find a sufficient reason for this neglect. We apprehend, however, that it will be found to spring in a great measure, from the same causes which have produced much evil in this country, and the bitter fruits of which we are now reaping. The first and chief of these causes, is the inordinate thirst for wealth, which pervades every class of society, and induces men to abandon their legitimate business to engage in some wild, hazardous speculation, in the hope of becoming suddenly rich. It is also too often the case that the farmer becomes tired of the moderate and gradual accumulation of property by the products of his land, and leaves the cultivation of it to engage in the business of commerce or manufactures. He finds out his egregious mistake when it is too late. The property he had accumulated is often squandered and lost in consequence of his ignorance of his new business, and he again sighs for the cheerful and independent mode of life which he has abandoned, when it is out of his power to resume it. We have in our mind numberless instances of this kind, where industrious and prosperous farmers have been lured to their ruin, by being induced to lay aside the implements of husbandry, and engage in the universal scramble after sudden wealth.

There is another great error prevalent upon this subject, and that is, the business of agriculture is generally looked upon as less respectable than that of commerce, manufactures, or the professions; and wealthy farmers,

should be well dressed with the scarifier, harrows and roll, and the dressing repeated, then ploughed up again, to air the soil, for the foul matter to escape, and to imbibe fresh. This exposure might continue for a week or two, of course depending on the weather, then the manure ploughed under again, to remain some time, and to receive the proper dressings. If any seed or corn is to be sown, let it be generally on that ploughing which turns the manure in well beneath,

instead of teaching their sons their own business, most usually transform them into merchants, lawyers, doctors, or dominies. This is all wrong. Agriculture is the very back-bone of all business, the main-spring of all wealth, and should be regarded as a profession of the highest respectability. It gives those engaged in it a feeling of independence, genuine nobleness without ostentation, honor, honesty and firmness, well calculated to perpetuate the free institutions of our happy country. The truth of the eloquent panegyrics of the ancients upon this employment may be more easily realized here, than in any other country upon earth. We confidently hope to see public opinion speedily righting itself upon this subject, and to find people seeking their permanent interests, and advancing the prosperity and glory of our wide domain, by engaging more generally in this healthful, honest and independent business.—*N. Y. Sun.*

[From the *Sangamo Journal*.]

Important to Farmers.

There are few of our farmers who have not witnessed the effects among cattle, of a disease known as the *mad itch*. It has sometimes carried off the most valuable stock; and all efforts to arrest the disease appeared to be useless. We think we can now lay before our stock raisers a remedy for this disease. It was discovered by Mr. David Simms, a farmer, living on Lake Fork. Considering it valuable to the public, he has handed us the annexed notice of it for publication. We would suggest to our farmers to preserve it, as it may prove of more value to them than the amount they would be required to pay for a dozen volumes of the Journal:

To the *Editor of the Sangamo Journal*—

The undersigned takes this method to inform the farmers and all those who raise cattle, that he has discovered a cure for the *mad itch*, a disease which is often fatally destructive to that species of stock. Last winter was two years, when I had four cows attacked with the above complaint, and I tried every thing I could think or hear of, to cure them, but with no good effect. This winter another of my cows took the same disease, which I discovered early one morning; and as soon as I discovered it, I gave her as much soot and salt as she would lick, and in a few hours after, I gave her from three quarters of a pound to a pound of pulverized brimstone. In the morning following, I gave her as much salts. The cow is now well, and is as hearty as any of my cattle. It is my opinion that sulphur itself will cure, or sulphur and salts given in the way prescribed. The cure was effected in about a week. The remedy operates severely for two or three days as a purge.

To those who are not acquainted with this disorder, I will inform them that it first comes on with a kind of hiccoughs or jerks at every breath. The brute jerks itself full of wind; frequently licking their sides and back; occasionally rubbing their heads; and if not stopped in five or six hours, they rub with apparent madness, and continue to swell until death takes place, which will be within about ten or twelve hours after the attack.

This cure is from experience, and I give it for the good of my fellow-citizens.

DAVID SIMMS.

Logan Co. March 15th, 1839.

Management of Sandy Loams, &c.

Mr. Ducket, of Surry, England, a most accomplished and successful farmer, ascribed the luxuriance of his crops to three principles, which he laid down for his guidance, and strictly adhered to. He relied, upon, 1st, deep ploughing, by means of which the roots of his plants were permitted to penetrate the earth to a depth where they found a uniform moisture, by which they were preserved in a healthful and flourishing condition, while those of his neighbors, who were *shallow* ploughers, in seasons of drought, were measurably destroyed.

In Flanders, in the Peys de Waes, where the soil was originally a barren white sand, by a sure process has been brought to a state of fertility which entitles it to be called a fruitful loam. At first it was barely scratched, being ploughed not more than ten inches deep; it was subsequently gradually deepened as it was enriched,—and it is now stated that this barren sand has been so fertilized that it bears to be entrenched to the depth of fifteen or eighteen inches. This operation is performed every seven years.

Clay soils.—All clay soils intended for spring culture should be turned up in the fall, to receive the benefit of the action of the winter's frost, which mellowes and reduces it infinitely better than any treatment which man is susceptible of giving it. If very tenacious, its condition may be greatly improved by simply adding sand to it, after the ploughing, and so harrowing it as thoroughly to mix the two together. Instances of the success of this practice are numerous in Europe, and are said to have been so decidedly striking as to excite surprise. In numerous cases the advantages have been equally as great as if the clay has been heavily manured.

Milch Cows.—These animals should always, if possible, be kept where they can have free access to good water, whether ranging in the pasture or confined in the barn-yard. From experience, we hesitate not to say that having water always at hand will make a difference of 25 per cent in favor of their yield. In winter no man should pretend to keep a cow to the pail who does not provide her twice a day with either good rich slops, pumpkins or roots. How in the name of St. George can it be expected that a cow fed upon dry hay,

fodder or tops, from November till April, can secrete any considerable quantity of milk; we know that there is a large quantity of nutritive matter in each of these kinds of provender; but to replenish the udder, it is necessary that some such liquids or succulent pabulum be daily given. No one should keep a cow to the pail who does not keep her well; humanity as well as true economy are both consulted in so doing.

Marl.—The meliorating effect of marl has been known in Europe for a long time, and clay, stone and shell marl have been severally used with decided advantage, and as our tide water regions are well supplied with each of those varieties of calcareous matter, we trust, as a beginning has been made, that wherever obtainable, our farmers will freely use it. Of this they may be certain, that nothing like permanent improvement can be effected without the use of calcareous manure of some kind. With the aid of lime, or marl in some one of its forms, with the addition of grass leys or green crops of some kind turned in, almost any soil may be pushed beyond even its primitive state of fertility.

Accumulation of Manure.—The scrapings of the road, the lanes, leaves collected from the woods, weeds from fence corners and any where else, marsh mud, fresh or salt, and indeed all vegetable or animal offal, if spread on the surface of your cow yard, becomes in a few months as good manure as stable or cow dung, for in addition to their own specific virtues, they sponge up and retain great portions of rich liquids which would otherwise be lost. All cow yards should be basin-like in form so as to prevent the escape of such liquids.—*Farmer and Gardener.*

Advantage of Manure.

We have frequently endeavored to call the attention of our readers to the subject of manures, and of applying them to the soil, but we fear that farmers in general, do not sufficiently appreciate their value. Our reason for forming this conclusion is, the prevailing inattention to the matter; although farmers are ever ready to acknowledge their conviction of the value of manure, yet we think their negligence in applying the means for procuring, preserving, and applying it to their lands, is a plain proof that its real value is not generally known. The following short narrative is as plain a demonstration of its profitable effects as we have usually found; which, although we were not eye witness of the facts, came to us through a channel which left no doubt of their correctness.

A gentleman, somewhat inexperienced in the business of farming, sowed a piece of ground containing about twenty-one acres with wheat, at the rate of one bushel per acre, from which he obtained only twenty-one bushels, or about the quantity sown. Thinking that the result might have been owing to some unfavorable circumstance, to which a second crop might not be subjected, he again sowed the same piece of ground with a like quantity of seed, and again obtained a crop similar to the first. This latter result induced him to think that the failure in both cases, was perhaps occasioned by the exhausted state of his land; he therefore resolved to test the effect of manure, and accordingly collected what he could, and applied it to one acre of the same ground, which acre he sowed a third time, and obtained from it twenty-one bushels, or as much as the whole twenty-one acres had produced without manure.

We not unfrequently receive details of as profitable results from the application of manure as the above, and we have not a remaining doubt, but almost all exhausted land might, with proper culture, be as much or more improved; but what adds consideration to this, is the great improvement in so short a time. And it goes further to prove the utility of applying manure liberally on a small piece of ground, rather than the too common practice of scattering a small portion over a whole farm of considerable extent. Had the gentleman in this case have scattered his manure over the whole twenty-one acres, it might have yielded him more grain than he obtained from the one acre, but we must observe that it would have required twenty-one bushels of seed instead of one, and besides, a great deal more labor and expense in cultivating, which items would have greatly reduced his clear profit. This error in the most of our farmers, produces a serious drawback, and cheats them out of the greater part of their profit; if, instead of one hundred acres, they would apply the same amount of labor and other expenses on twenty-five, they would raise as much or more produce and consequently their clear profits would be greatly increased.—*Farmer's Advocate.*

Salt-petre in Meat.

Lansingburgh, N. Y. August 5, 1839.

It is a matter of regret that while so much salt meat is made and used, we have not yet acquired the proper knowledge of the best mode to prepare and preserve it; nor is it known how noxious salt meat may become by an improper use of salt-petre in the pickle or brine usually employed.

There are various modes of preserving salt meat and fish, by drying, salting, pickling, oiling, smoking, &c.; but I merely mean at present to notice some of the defects and noxious properties of our actual meat, either beef or pork.

One of the main defects appears to consist in the use less addition of salt-petre to the pickle whereby the meat often becomes sour or spoiled, and always acid and pernicious. I never could understand why this substance

was added to common salt, except that it is said to make it look better. But it ought to be known that salt-petre absorbed by the meat is *nitric acid or aqua fortis, a deadly poison!* whereby our salt meat becomes unpalatable and pernicious. A slight excess of this acid renders the meat sour, or spoils it, as we say. It has been suggested to correct this by potash, which re-absorbs this excess; but this only hides the defect without neutralizing the whole poison.

Is it not surprising that we should feed and deal, as a staple of our country, with an article containing a portion of such active poison as *nitric acid?* In fact, our salt meats are *no longer meat!* They are a new pernicious substance produced by a chemical action of salt upon the flesh of animals. This flesh, when fresh, consists chiefly of *gelatine and fibrine.* Gelatine or jelly is the substance soluble in warm water, forming a broth by boiling, or becoming a jelly by concentration; while fibrine is the fibrous tough part of the meat, which cannot be dissolved, and is therefore unfit for food, while gelatine is the nutritious part of the meat.

But it is well known that salt meat and even corned beef can no longer afford a broth, and therefore the gelatine must have been changed to another substance no longer soluble, nor so nutritious, by the chemical action of salt and salt-petre. To this new substitute chemists have not yet given a name; but it is as different from meat as leather is from the hide before it is tanned by the tanbark or *tannin.*

To this chemical change in meat are to be ascribed all noxious qualities of salt meat, and the diseases to which those who feed chiefly on it become liable; sea scurvy, land scurvy, sore gums, rotten teeth, bilges, ulcers, &c. which we entail on ourselves by using a kind of poisoned bad meat, which we call salt.

This important and doleful fact ought to be well known generally to all those who raise cattle, cure meat, or consume it, in order that they may correct this sad defect.

The first thing to be done is to abandon altogether the use of salt-petre in curing meat. This is indispensable, and no one who is told that aqua fortis is the produce of it, ought longer use this poison in pickles or brines.

The best substance for it is *sugar.* A small quantity makes the meat healthier, sweeter, nicer, and quite as durable. Let this be known to all our farmers and sailors.

How to make brine for meat perfectly innocuous, is yet a desideratum. Gelatine ought to be preserved in salt meat pure and soluble, as it is broth in cakes, before any salt meat can be perfectly healthy and equal to fresh meat. But at any rate by withholding the salt-petre, we divest it of a deadly poisonous substance.

C. S. RAFINESQUE,
Prof. History and Natural Science, Elm Place.

Agricultural Warehouses.

One of the great causes which has led to the superiority of English agriculture, is to be found in the establishment of agricultural warehouses, nurseries, seed-stores, &c. in all the principle cities and villages of the kingdom, where agricultural implements of the best kinds, seeds and trees of the best quality and varieties can be obtained by all who wish them, at reasonable rates. The establishments of Loudon, and of Knight, in London, and of Lawson, and Dickens, in Edinburgh, are celebrated for the extent of their collections, the great amount of business they perform, and the acknowledged benefits they have conferred on the agricultural world. In these warehouses, seed stores and nurseries, may be found ploughs, harrows, rollers, and all the tools and implements required by the farmer and gardener; seeds of the purest and most approved varieties, and fruit and forest trees suitable for every situation. A large proportion of the farmers purchase at these stores their seed wheat, their grass seeds, &c. and by long experience, the proprietors of these establishments, knowing the kind and quality of the soil, can better apportion the kinds and quality of seed required for such lands than the cultivators themselves. So extensive and necessary has these branches of business become, that in a late number of the London Gardener's Gazette, a list of those the most distinguished are given from the principal cities and towns, amounting to no less than 800.

In the U. States, such establishments could scarcely be less useful than they have proved abroad; yet their number is very limited, compared with what we think the advancement of agriculture, and the benefit of the farmer demand. A few, however, exist, and we hope their success will be such as to cause the establishment of others at all the principal points of our country. If in every principal city or village the farmer could be certain of finding at some store or warehouse, the implements he needs, of the best kinds and quality, he would esteem it a favor, as saving him much trouble in collecting from various places the articles he wants. And so with places for the sale of seeds and trees, which are becoming daily more useful and indispensable.

The agricultural warehouse of Mr. Breck, at Boston, the publisher of the New England Farmer, is one of the most extensive in New England, if not in the United States, and has been found of essential service to the farmers of that region. In the city of New-York, a beginning was made some years since by Mr. Fleet, then publisher of the New-York Farmer, in establishing such a warehouse, and is now carried on with spirit, and we trust success, by J. W. Weaver & Co. 79 Barclay-street. With the warehouse is connected a seed

establishment, conducted on liberal and honorable principles, and deserving the notice and patronage of the public. At Albany, Mr. W. Thorburn, (not of Chinese tree corn memory) has added the disposal of agricultural implements to his former business as a seedsman, and is doing much to bring within the reach of farmers in that vicinity, the best implements required by the cultivator of the soil. Several minor establishments have also been opened in the state, the business of which is rapidly increasing, and the benefits of which are every year more clearly felt and acknowledged. Among the seed stores of the state, the Rochester one holds a distinguished place for extent and usefulness, and the new arrangements of Mr. Bateham will doubtless give it greater efficiency and activity, and consequently diffuse its benefits more extensively through the district.

We always hail the establishment of nurseries of fruit or forest trees, warehouses for the sale of agricultural implements, and seed stores for the dissemination of seeds of good quality, and many varieties, as an omen of good to the country; as a proof that the spirit of inquiry and observation is awake, and that our farmers are beginning to appreciate the difference that exist between implements of the same name, and seeds of the same variety. Good tools, and good seeds, are indispensable to good farming, and this should be understood and practised upon by the farmer. A choice of seed will not unfrequently make a difference of one-third, or even more, in a crop of wheat or corn, and in nothing do farmers err more frequently than in sowing an impure, heterogeneous mass called grass seeds, but in reality made up of all manner of foul stuff for grass seed, thus propagating and perpetuating various nuisances on their farms. We say, let warehouses and seed stores be well patronized so long as they furnish good tools and pure seeds. The country reaps the benefit.—*Genesee Farmer.*

Care of Farming Tools.

We believe it may safely be asserted, that the farmer in a course of years sustains as much loss, or is put to as much expense in procuring tools, by their decay in consequence of needless exposure, as from their actual wear on the farm. How many are the instances in which the farming implements, the ploughs, harrows, roller, &c. instead of being carefully housed when their use for the year is over, are left in the fields, or peradventure drawn up in battle array in front of the house, occupying a goodly portion of the road, and when covered with snow, forming most convenient places for breaking horses legs, tearing off shoes, &c. &c. Perhaps, in addition to these, are sundry wagons, carts, hay-racks, and other necessary things, like the former, exposed to the decay which must result from exposure to the rains, the freezings, thaws and snows of winter. Now, one such season of exposure does more to weaken the wood of these implements, promote decay, and render new purchases needful, than their ordinary wear on the farm, with careful usage and protection from the weather. As a general rule, it may be remarked that no implement, tool or carriage of any kind should be exposed when not in use. Those not wanted in the winter should be secured from the weather during that time; and so with those not required during the summer season, as sleighs, sleds, &c. The skillful, thrifty farmer is known by his attention to the minor points of agriculture, by his care to save, as well as to acquire; and he who neglects the lesser things cannot fail to find the drawback on his profits large and constant.—*Ib.*

Women Milking.

Thirty years ago it would have been almost as difficult to find a man milking as to find a woman mowing, excepting in cases of very large dairies. In this respect matters are greatly changed; and any hope, for aught we see, of getting back to the old practice, would be vain. Half of the young girls now-a-days hardly know, at least they would pretend that it would be immodest and not at all lady-like to be presumed to know, whether the milk comes from the udder or the horns. "The rosy milk-maid," the title of a song which we remember to have often heard when a boy, is an animal not known in modern natural history; and as to a young lady with thick shoes, a chequered apron, her sleeves turned up, and a handkerchief tied over her head, though the apron should be clean and the handkerchief as white as snow, and never so pretty a pair of black eyes and ruddy cheeks peeping out from under it, it would be an idea too shocking for one of your modern exquisites even to dream of; and if presented to her abruptly, while looking in the glass her *mouseline de laines*, with her satin shoes, her gilt hair-comb, her paste earrings and her insect waist, as crooked as the limb of a scrub-oak, she would probably not recover from the fright for a week.

We say we have no hope of recovering the good old habits of former days. Revolutions never go back.—Yet in this respect we have lost a great deal. Men are seldom neat enough in their habits to be trusted with milking. They have not the patience to wash their hands or to wash the udder before milking. They are not gentle, and often abuse the animal by their kicks and thumps. They are in a hurry in the morning to get through a business which they dislike; and they come home tired at night; the cows are necessarily milked at an unseasonable hour, and the business is very often very badly performed. Women, on the other hand, are more patient, more gentle, more faithful, more neat,

and we were about to say—they ought to do the milking. The morning air would be bracing to their muscles, (if the modern girls have any muscles, for there begins to be a reasonable doubt in this matter,) and the odor of the cow has been long known to be, and is often recommended by physicians as medical. But we will not say what we were disposed to say, because it would be useless. It is utterly vain to attempt a contest with fashion; for according to Franklin's proverb, "he that spits against the wind, spits in his own face." We must, however, be just; and in riding through Dedham last week at the close of the day, it was quite refreshing to see in at least four cow yards, woman in her appropriate sphere; and by her pleasant looks and her gentle conduct as she sat at the side of the beautiful cow, evincing her gratitude to Providence for this richest of all the benefactors which Heaven has given to man in the form of a quadruped.—*New-England Farmer.*

Bringing Cattle to the Barn.

The 20th of November is universally understood throughout New-England as the close of the season of pasturage, and the time for bringing our cattle and live stock to the barn. Sheep may be left out as long as the ground remains bare; but it is believed to be bad management to leave cattle out after severe frosts come; and especially in storms of sleet and snow. Fat cattle in the fattening districts are tied up to be fed and turned into the yards at night. In this case the yards are well littered and a dry place is always furnished for the cattle to rest upon. For young cattle, well protected yards and open sheds with a southern aspect, are to be preferred to close and warm barns. For milch cows, however, stables which are dry, warm, but well ventilated and well littered, and kept thoroughly clean, should be provided, and these animals should never be exposed to cold rains or storms, or winds, which make them shiver and become restless; and of course cannot fail to diminish their milk. They should be well fed, and carefully curried, and treated always with gentleness and unvarying kindness. It is impossible to reconcile the careless, slovenly, neglectful, and we may add, inhuman manner with which these useful and beneficent animals are commonly treated, with any just regard to the farmer's own interest or even with the principles of common justice.—*New-England Farmer.*

Foreign Agricultural Extracts.

[From the London Farmer's Magazine.]

On Farm Manure.

To the Editor of the Farmer's Magazine.

SIR—It cannot be expected, while men differ upon every subject in religion, morals, and polities that there should be a perfect uniformity of judgment in the leading divisions of agriculture. The constitution of our moral powers leads to differences of opinion—this difference arises from education, prejudice, habit, and indolence; the dropping of water, however, at last wears a stone; and seeing how many impediments stand in the way of improvement, we must not be discouraged by the slow advances which have, as yet, been made in agriculture. It must be admitted also that many farmers are so limited in their capital as to be, in a great degree, unable to try costly experiments or to undertake considerable improvement; but all of them are interested in the collection and distribution of their MANURE, and all of them have the means of attending to these important duties.

We have abundant proof of the vast benefits which a persevering desire of improvement has already bestowed; look at the various breeds of sheep! examine our celebrated specimens of stock! inspect the beautiful prize animal presented as the frontispiece to your last number! behold also the rich verdure and abundant crops which cover the valleys and mountains, fructified and improved by various modes of management and by various systems of cropping! Many deserts have been made to blossom and smile; many fields are now waving with golden-eared wheat which, but few years back, were worthless sheep-walks. It would confer a great obligation on the writer if some one of your correspondents would tell us the number of the millions of soughing tiles, buried under the surface of our lands, in order to drain and improve them. Nor ought we to overlook the various modes of artificial management now directed to general improvement by bones, rape-dust, salt, gypsum, &c. The agency of chemistry has, moreover, been solicited, and she is now giving to us the aid of her secret laboratory. Within the memory of man scarcely a single acre of wheat was grown in Scotland; "oats full of thistles was the standard crop." Nor can any contrast be more striking than the well cultivated fields, at present beheld in our country, as compared with the cold, wet, and barren sterility which pervaded it formerly. Now the great agent in preparing this abundance is MANURE. It is therefore, well worthy of the farmer's inquiry, how far the influence of this great agent can be extended? How the quantity can be increased, and how that quantity may be rendered more effective as to production?

These remarks must be understood as applying to those lands which are under plough. It is hardly worth while to stop to inquire into the secrets of the causes of the exhaustion which land, in common with animal existence, sustains by continued exertion—it is a law of nature. I admit, however, that if the discovery of the cause could lead us either to prevent or to retrieve the

diminution of strength, the inquiry might confer upon us a benefit; it is, moreover, an undoubted fact, that the rotation of crops has a tendency to lessen the inconvenience now referred to. There is some plausibility in the doctrine of M. de Candolle, who maintains that the roots of plants eject certain excrementary matter which cannot be elaborated into the support and nourishment of the plant itself. This fact seems in conformity with the regular process of animal existence, in the elaboration of food necessary for support; and the wisdom of the Creator appears more than abundantly proved in the provision thus happily made for universal reproduction. It is, however, left to our own judgment and skill to make this law as beneficial as possible, and it is working along with an established law of nature, when we regulate and apply most efficiently the means of growth and fructification bestowed upon us by this excremental process, directed and distinguished by wisdom and goodness; it is, therefore, in analogy with an established system, when we conclude that the matter ejected from the roots of one crop may provide a stimulant for its successor. The mysterious cycle of decay and reproduction being in ceaseless movement through the whole range of creation.

In considering the subject of FARM MANURE, there are two matters which prominently belong to it, and to which I trust your readers will direct their attention.

First, as to quality.

Secondly, as to quantity.

The time is past and the doctrine also, in which it was maintained, that upon ordinary lands, a crop of wheat might be grown continuously without manure.—The process of fermentation and putrefaction is always at work in order to provide the food of plants, on which depends the support of all terrestrial animals, and as just noticed above, the wise provision made, for the beneficial action of decomposed matter in the work of reproduction, proclaims the wisdom of the process.

Let us, therefore, inquire, first, how the *quality* of manure may be improved and made most efficacious? The foundation of the farmer's management must primarily consist of the straw consumed in his fold yard, and which in the first place supplies winter food for his stock—The more of this food therefore which undergoes the process of digestion, the better it is for his manure; the prominent duty of the farmer is, therefore, to keep a quantity of stock in proportion to his quantity of food. By this means he secures not only the profit upon his improving stock, but the profit also upon his improved manure; this mode conduces to the most profitable employment of the farmer's capital, and should, therefore, as far as practicable, be put into use; but without neglecting the subsidiary aid occasionally derived from the mere treading down of straw in the yard where it is exceedingly plentiful.

The next agent in the improvement under consideration will be found in the use of every other attainable variety of food in the farm-yard, such as turnips, oil-cake, beet-root, rape-dust, linseed, &c. &c. the better the food the better the manure heap; the more food taken to the fold yard to be consumed there, in addition to the straw, the more valuable will be the manure. It is now an ascertained fact that animals thrive much more rapidly when sheltered from the winter's blast. Mr. Handley, M. P. read a paper of Mr. Chidlers on "Sheep feeding of Sheep" at the late Oxford meeting, in which it was stated that an experiment had been made by the author which produced the following results. A score of hogs were fed equally upon turnips, linseed, &c. in a shed, with a score of the same weight which were fed on the same food in the field. From the 1st of January to the 1st of April, those which were fed at home, gained 19 stone 12 lbs. over those which were fed in the field, which is about a stone each per head. Those persons, however, who are in the habit of growing a pretty good quantity of Swede turnips, will always be in the possession of an exceedingly cheap, nutritious, and profitable food for the fold yard. No plant yields so abundant a supply either in the field or in the farm-yard as the Swede turnip.

The third regulation I recommend for the improving of the quality of manure, consists in the mixing of all the produce of the farm-yard together, the pig-stye, the stable, the dove-cote, and the feeding-shed must all contribute their respective quota of manure. The several products ought to be thoroughly mixed together, and if led out previously to the heap being applied to the crop, let such other supplies of night soil, rape-dust, ashes, &c. as are within the farmer's reach, be added thereto and mixed therewith, and then finally let a four inch coat of fresh soil be placed thereon as a covering to prevent evaporation till it is called into use.

The next matter to be attended to is the collecting in cisterns all the urine from the stables and feeding-sheds. About every ten days this should be pumped up and carefully dispersed all over the heap by means of a coarse watering pan. The ammonia (chartshorn) which is a constituent principle of urine, supplies a powerful stimulant in the process of vegetable growth, it ought to be carefully collected and diligently applied, so as that it may percolate through the whole mass while accumulating in the yard.

Fifthly, the heap ought to be kept entirely free from any weeds whatever, the seeds thereof being almost indestructible. There ought to be channels, also, for the conveying away of all the rain water falling from the roofs of the surrounding buildings. The urine of the stock, together with the rain which falls upon the surface, will supply sufficient moisture; an additional sup-

ply will only tend to the impoverishment of the compost.

These several methods suggested for the improvement of FARM MANURE are recommended to the attention of your readers. So much space has already been consumed that we must leave that part of the subject relating to the quantity of manure for a future number. These suggestions are confined to those ordinary means which fall within the reach of the practical farmer, in order that they may be more generally useful.

When it is considered how much the productiveness of our farms depends upon the manure heap, and how much this matter is at times neglected, a few thoughts will not, I trust, be unacceptable which have for their object its improvement; and although familiar to most of your readers, if they should stimulate any person to apply them, who have hitherto neglected to do so, the object in writing them will be attained.

I am your obedient servant,
RICHARD HOPPER.
Papperwick, Nottinghamshire, Sept. 10.

Structure and Functions of Plants.

The cultivation of the various agricultural plants is by far the most important of the labors of the husbandman. The spontaneous productions of the earth are only sufficient for satisfying the wants of man in a rude state of society: but as civilization advances, a taste for the comforts and luxuries of life is manifested in a greater degree, and the cultivation of the soil becomes important, in order to produce a greater quantity of vegetable food, and that, also, of a superior quality.

A knowledge of the structure and functions of plants is of the first importance, as laying the foundation of an economical system of culture. The necessity of becoming acquainted with the various phenomena of the vegetable economy is apparent; in order that the cultivator may avail himself of the great influence exercised, by human agency, over the productions of the vegetable kingdom, to the greatest extent. Apart from any considerations of profit, the study of the vegetative process affords greater pleasure than that of any other branch of natural science. But, if we can influence a seed so much, that, instead of growing up into a useless, stunted stalk, fit only for the herbarium of a botanist, it shall spring up luxuriantly, and send forth such a profusion of stems as to form a little sheaf of corn; or, expand its roots, which may be naturally hard and useless, into a large esculent mass, weighing many pounds; and, if we can do all this without knowing more than the means we have employed, might we not anticipate still greater and more wonderful effects, were we acquainted with the processes of the vegetable economy, by which such happy results were obtained? We should then be able to know what it is in our culture that has aided, and if there be any thing in it that has obstructed the processes of nature.

The importance of acquiring a certain knowledge of vegetable physiology cannot be pressed too much upon the attention of the cultivator. By means of selecting and improving the varieties of plants, the produce of our gardens and fields is not only increased in a ten-fold degree, but the quality of the produce is increased in a still greater proportion. The rose is the offspring of cultivation; the original plant, from which all our beautiful varieties have proceeded, is considered by botanists, to be the common wild briar. Our plums are cultivated descendants of the sloe; the delicious apples, whose species may be reckoned by hundreds, are the cultivated successors of the small, austere crab; and our cauliflowers, cabbages, and other esculent vegetables, may be regarded as almost artificial products, so much has human skill had to do in their production.—Here the labor and assiduity of man are seen triumphing over the sterility of unassisted nature, and succeeding in bringing forth a race of beings calculated to supply his wants in a manner that the original species never could have done.

If the faculty of increasing the stores which Nature has already provided for his support, raises a man above the brute, that of adding new productions to those in existence, raises him above his fellow; and few subjects of contemplation can be more gratifying, or more elevating to a reflective mind, than this power as it were of creation, granted to his intelligence and industry.—Nor is it necessary to its enjoyment, that we should be either botanists or natural philosophers; or that we should devote more than occasional leisure hours to the pursuit. Boundless, indeed, is the scope which it affords for experiment, that it is in the power of any one, possessed of the smallest garden, and the least acquaintance with the principles of culture, so to improve the qualities of its products, as to add something to the common stock; while the farmer, who will take the pains to mark the progress of his crops, and to select from them the most productive ears of corn, and the finest roots and grasses for seed, may, by perseverance in such a plan, not only acquire wealth for himself, but confer an inestimable benefit on his country.—*Ib.*

The Rohan Potato.

Some time ago we directed the attention of our readers to a potato which the Prince of Rohan had introduced into culture in the neighborhood of Geneva, and which promised to yield very great returns. Since then it has received the attention of the agriculturists of Germany and France, who are not so much farmers as proprietors and scientific experimentalists, of whom there are many more of the latter class on the Continent than

in this country, where scientific men will scarcely descend to make experiments in the open fields. This potato has as yet attracted little or no attention in this country amongst farmers, and therefore we can give no account of any trials that may have been made of it here; but as it appears to yield large returns compared with many of the sorts in common cultivation, and though it seems a rather coarse potato for the table, it may prove useful in some districts for fattening livestock. We shall communicate the latest intelligence in regard to the mode of its culture abroad on a small scale, no trials having yet been made in the open field.

The first experiments we shall relate are those of Viscount de Saint-Geniez, whose experience enables him to state that the Rohan potato is of a kind which has a strong tendency to grow above the ground, and, on that account, requires great earthing up all round about it, and, of course, it should only be set in ground deep enough to admit of earthing up.

"Towards the end of March of this year, 1837," says the Viscount, "I chose a large square bed in my kitchen-garden, equal to a good quarter of an arpent (1 arpent = 1 acre,) which was made fine without dung. I formed lines of holes, east and west, at 3 feet apart every way, of 6 inches in depth. I divided the ground into three portions, north and south, and, of course, all having the same exposure. I then placed the sets of potato cut diamond-shaped, having each from one to three eyes, (dried for thirty-six hours on the side of the trench) into the holes, and covered them up with three inches of earth. Four weeks after, the stems began to appear, and, in a few days, they were above ground, which obliged me to fill up the holes. The stems growing tall, I tried this experiment with them: The first division was well earthened up all round, and a stout support placed at each mound of earth. The second was earthened up to the south, according to the advice of the Count de Turenne, but had no supports. The third was cultivated as a kind of potato is cultivated at Roville, by that eminent agriculturist M. Dombasle, simply by letting the earth alone without earthing up and supports.

"I took up the potatoes on the 25th of November, and obtained these results: In the first division, with the plants earthened up all round, and with supports for the stems, which grew to the height of 6 feet, and the tubers weighing generally 4½ lb. 4 lb. 3 lb. and 2 lb. each, the crop weighed, 548 lb.

"In the second division, earthened up on the south and without supports, the tubers weighing 3 lb. 2 lb. and 1 lb. the crop was, 364½ lb.

"In the third division without earthing up, and the ground left without any care but that of weeding, the potatoes being smaller than any of the above, the crop was, 318 —

Total produce, 1,230½ lb.

"These 1230½ lb. raised on a quarter of an arpent, were produced from 30 lb. of sets, which gives an increase of 40-fold, which might have been raised to 60-fold if I had not made experiments contrary to the nature of this new kind of potato."

The Viscount comes to the conclusion, from the experience of the culture of the Rohan potato for two years, that earthing up largely is indispensable; that supports are necessary in a cold country, as a facility to the heat to penetrate to the tubers; but that supports are less necessary in a warm climate, as the creeping stems preserve the tubers from the great heat, and prevent, by their coolness, the mounds from cracking. It remains to be seen whether the same success will attend the culture of this potato in the open field, and earthened up with the plough, which the Viscount proposes to put to the proof.

The next experiments which we shall relate, are those made by M. Pergot, at Rudit near Port-sur-Saône. They are also on a small scale, but M. Pergot proposes to try the field-culture in the ensuing year.

"On the 20th April, 1837," says M. Pergot, "I planted, in holes 6 inches in depth and 2 feet asunder every two, 37 lb. of tubers, divided into sets having one or two eyes, and covered over with three inches of earth. The soil was sandy, and the space covered was 4.02 acres (an acre being a square of 22 feet.) Three modes of culture were adopted; the first was just to fill the holes with earth the two others suitably earthened up. On the same day I planted, in the same manner, 187 lb. in a light soil of medium quality, covering a surface of 16.050 acres. They received the same culture as the preceding, but only there were no props to the stems which being 5 or 6 feet in length, covered the ground. They all flowered, what I had not seen since I began their culture three years ago. Yielding to the requests of several cultivators who adhere to erroneous practice, I planted 12 tubers entire, of the thickness of a turkey egg, and they have given me the worse produce, the largest not weighing 2 lb. The fear of frost determined me on taking up the crop on the 10th October, and I obtained from the first field, 1,080 lb. from the second, 12,810 —

In all, 13,890 lb

or 62-fold. Most of the tubers weighed from 2 lb. to 5 lb. It is highly probable that they would have attained greater bulk, if I had not taken them up so soon, and if the stems had not been damaged by the hail which fell in the month of August."†

* Le Cultivateur for January, 1833.

† Id. for April, 1833.

The peculiar result of these experiments seem to be, that the produce of 1080 lb. from 37 lb. of sets is only 29-fold, whereas the 12,810 lb. after 187 lb. of sets give 68½ fold the average of the two being 48½ fold. The largest produce in these experiments was derived without support to the stems, whereas the results of Viscount de Saint-Geniez's experiments, given above, are quite the contrary.

The experiments of Vis. Morel-Vinde in some respects confirm those of M. Pergot, in reference to the largest produce being obtained without props to the stems, in the ratio of 58 bushels to 63 bushels per 2 1-6 perches of 22 feet square. Vis. Morel-Vinde, in the end of March, 1837, put into a good and light soil, not recently dunged, labored with the spade, containing 26 perches, divided into 12 equal parts of 2 1-6 perches, sets of two eyes at two feet apart each way; and each division was cultivated in a somewhat different manner, varying in the matter of props, and the number of hoings and earthings up. The result from the whole was 666 bushels of potatoes from 26 perches of 22 feet square each; and, as the sets filled 20 bushels, the produce was 33 fold. A common kind of potato, yellow and round, and of less size, though more productive than others in its neighborhood, was planted at the same time with the Rohan; and its produce, in the best circumstances, was only 250 bushels from the 26 perches, or 12½ fold.

The remarks of Vis. Morel-Vinde on the nature of the Rohan, are valuable, and, in perusing them, the best method of cultivating it may also be learned.

"1. The Rohan potato," he says, "keeps together its tubers round the foot of its stem, and this property permits its being earthened up as much as desired.

"2. It produces its tubers so near the surface of the earth, that, without earthing up, many of them would show themselves above ground, assume a green color, and exhibit a great want of maturity. This property shows the absolute necessity of a large earthing up.

"3. This potato has need of moisture being preserved around the foot of the stem, the elevated position of the tubers exposing them the more to drought. It is this property which renders it indispensable to allow its large leaves to remain on the ground for the sake of the shade afforded by them.

"4. It carries flowers on almost all the stems, but it bears no apples, which may be explained from the circumstance of the large size of the tubers. The tendency of the sap constantly towards the tubers absorbs the elements necessary to the formation of apples, and deprives the plant of this mode of propagation.

"5. To form and ripen the large tubers, it requires to be a long time in the earth. It ought thus to be the first planted and the last taken up.

"6. I shall now speak of the quality of this potato, that varying according to the nature of the ground, and as often from different tastes; but at Celle Saint-Cloud I have subjected it to various cooking and culinary processes. I have had it tasted by great amateurs of the potato; and, if its quality is not superior to several fine and more succulent kinds, it is found at least to be of a good taste, sufficiently mealy, and superior to most of the kinds employed in feeding cattle or making starch."* —Edinburgh Quarterly Jour. of Agriculture.

Fattening of Swine.

M. Bengtrapp mentions, in his work on the fattening of swine, several experiments which serve to shew the fattening powers of boiled carrots, potatoes, and some others. He brought up separately five couples of pigs, and obtained, after a certain length of time, the following results:

| Couples. Food. | Increase of Weight. |
|--------------------------------------|---------------------|
| 1st got 55 decalitres of peas, | 22 st. 7 lb. |
| 2d " 23 " balls of wheat, 24 " | 3 |
| 3d " 96 " buckwheat, | 26 10 |
| 4th " 93 " boiled potatoes, 20 " | 4 |
| 5th " 175 " boiled carrots, 28 " | 2 |

These results of the experiment are unsatisfactory; because it is not mentioned whether the pigs were all of the same age and weight, nor is it stated whether the quantity of food marked in the table was as much as the pigs could consume. We have always believed that peas were the most nutritious food that could be given to pigs, and this experiment confirms the belief, as may be seen on comparing the relative increase of weight obtained from the various kinds of food: viz. 55 decalitres of peas gave an increase of 22 stones 7 lb. or nearly 6 lb. of increase of pork from 1 decalitre of peas; whereas, from boiled carrots, 23 stones 2 lb. of increase were only obtained from 175 decalitres, or about 2½ lb. from 1 decalitre, giving the advantage over the peas in the ratio of 2½: 1. The next most nourishing food is buckwheat, which nearly gives 4 lb. of pork from 1 decalitre. Boiled potatoes are next, giving nearly 3 lb. of pork from 1 decalitre. And the lowest quantity of pork obtained was from the balls of wheat, which is as low as 1 1-5 lb. from 1 decalitre. Flour would, no doubt, fatten better than wheat, especially if the feeds were made into small dry balls of dough and frequently administered, but better still, if made into bread of flour ground over-head.—*Ib.*

Profit from Thorough-Draining.

A farmer in Lanarkshire, whose name we are not at liberty to use, tried the effects of thorough-draining on a small field of four acres. Two acres of this field were drained in every furrow, the subsoil being retentive, but

* Le Cultivateur for March, 1833.

† A decalitre is equal to 15 pints.

the upper soil was favorable to the growth of green crops. The other half was allowed to remain undrained, as the whole had been until the winter of 1837. In spring 1838, the whole field was worked for, and planted with potatoes. The potatoes were sold, and the result was, that the thorough-drained half yielded £45 an acre, whilst the undrained only realized £13 an acre. The drained land thus yielded about three and one-half times the undrained; and, supposing that the draining cost, at the utmost stretch, £10 an acre, the first crop, notwithstanding, not only repaid that cost, but left £22 an acre more than the whole crop per acre of the undrained land. What an encouragement does this simple fact and single instance of profit hold out to farmers to spare no expense and indulge in no hesitation in thorough-draining retentive-bottomed land? Although £45 an acre is a very large sum to obtain for an acre of potatoes, yet the crop was generally very deficient last year, and good potatoes were very scarce; but it must not be supposed that that amount was all profit, for the expenses of raising and driving the crop to market fall to be deducted from the value of the gross produce; still, £45 and £13 give the relative values of produce obtained from drained and undrained land. It is worthy of remark, that draining renders strong soil capable of raising a large green crop even in a wet season, whilst soil, in want of draining, is comparatively materially injured in a wet season. It is obvious that the soil here spoken of only required draining, to render it eminently qualified to raise green crops; and there is abundance of such soil in the country.—*Edinburgh Q. J. of Agriculture.*

Mode of Ascertaining the Milking Properties of Cows.

The French Agricultural Societies have been lately occupied in investigating the pretensions of M. Guenon, who asserts that he can, by means of certain outward marks common to every cow, at once declare what quantity of milk she gives, of what quality it may be, and how long it will last after calving. In a late number of the *Annales de l'Agriculture Francaise*, we find the particulars of a report made to the Society of Agriculture at Rosoy, on an examination which took place of M. Guenon's system. The application of his plan was tried in the dairy of one of the chief proprietors of the place. It appears by the report, that out of 30 cows submitted to his examination, 25 were perfectly well described as to their milking qualities, and in the other 5, the differences from the truth were of such a nature, as to leave room for doubting whether they were not apparent rather than real differences. In two cases only was M. Guenon altogether in error. Afterwards, 20 milking cows were brought under his notice, and in thirteen cases, his declarations agreed perfectly with those of the steward of the farm; three of the others to which he had attributed a greater quantity of milk than they really produced, were declared to have diminished from age, for which he, having made the examination with great rapidity, had not made any allowance.—With respect to two others, the steward was not able to declare positively as to the produce which they gave; for the other two, there were several quarts difference from the quantity named by M. Guenon.

In making his examination, M. Guenon more than once declared, that when he was required to name the quantity of milk exactly in measure, it might occur that his declaration was less than that which the animal produced, but that if the whole of the judgments which he gave were compared, it would be found that the relative proportions held good throughout the whole dairy. Besides, he does not maintain that he may not sometimes be in error; he thinks that it arises from the imperfect mode of applying the system, and not from the system itself. A circumstance occurred on this occasion, which serves to confirm the certainty of M. Guenon's judgment. He had to examine in a stable apart two heifers, of whose mothers he knew nothing; he declared that they ought to give certain quantities of milk, differing altogether from each other, but agreeing perfectly with the nature of their mothers. An individual, not belonging to the farm, asked permission to bring in a cow whose produce he knew perfectly well, and of which he named beforehand, the quantity of milk, its continuance, and its quality. M. Guenon's account agreed in all parts with the person's statement. M. Guenon was afterwards taken to the farm of M. Gilbert, and five cows were submitted to his examination. He was perfectly correct as to the quantity of milk they gave, and its duration; as to its quality, the servant who was in charge of the place, could not declare any thing with certainty. Amongst these cows was one which was an exceedingly bad milker; on her appearing M. Guenon uttered some exclamations on her beauty. The persons present thought he was on the point of making some mistake. On examining her nearer, he at once declared her not equal by half in produce to the rest, and retaining her milk for five months only. In both respects he was perfectly correct.

The following article appeared in the *Gardener's Gazette* of the 4th May last, which gives an account of the discovery of M. Guenon's, as far as it has been made known.

MODE OF JUDGING OF THE MILKING QUALITIES OF COWS.

The Minister of Public Works and Agriculture in France, was lately applied to by a M. Guenon, a landowner at Libourne, respecting a new method which he had discovered for classing the cows of every descrip-

tion, according to the quantity of milk which they can give per day, the quality of their produce, and the time they can keep it. The minister requested the Society of Agriculture to take charge of the necessary experiments to test the value of the discovery; and, in consequence, certain members were appointed to investigate the matter. M. Guenon, previous to his arrival at Paris, tried to obtain a remunerating number of subscribers to a pamphlet of his, containing full particulars of his discovery. When the total of the subscribed sums would amount to what he thought a sufficient reward for his secret, he proposed to send each subscriber a copy. This work he shewed at once to the gentlemen appointed by the society. In their report, they allude to the work, but very cautiously abstain from disclosing the mode of M. Guenon's procedure. They presented lately a report of what they did, from which we gain the following information:

M. Guenon's declaration goes so far as to assert that he can decide respecting the quality as well as the quantity of the milk. He asserts, besides, that his system applies to calves, no matter how young; so that, from examining one of the bovine race, he can predict with certainty the qualities which the animal, whether male or female, must be marked by. This part of his plan could not be tested, as it demands an examination extending to several years. M. Guenon gave an opinion before the gentlemen appointed by the society to act as a committee, on 149 cows giving milk, on 17 bulls and male calves, and 30 females. The whole experiments lasted four days. It would appear from the terms of the report, that M. Guenon, in deciding on the quantity of milk in those cases, only approximated, but did not often hit on the exact number of quarts. Out of the 149 cases, only 21 were exactly corresponding with the declarations of the owners of the cows. Also, in speaking of the time during which the cow holds her milk before calving, M. Guenon was seldom exact; the most he did was to come near the mark. On 2,573 quarts of milk given in three dairies, he was wrong in 514, or a fifth of the whole. The committee declare that the characters which serve as the foundation of the system are easy to be understood. The only fault they find is in the number of divisions and subdivisions which his system includes. First of all, he makes eight classes, and to each of these, the mark which serves as a guiding star may be varied frequently, according to the age and form of the animal. This gives eight subdivisions to each, which at once gives sixty-four different orders.—Again, in each of these there are three degrees, according to the age of the cows; so that we have thus 192 different kinds. But, omitting this drawback, it must be acknowledged that the character which directs him, and which is common to the whole of the race, must be considered of some value. He was incorrect in several instances, no doubt; but his method of deciding is new, and may be carried much farther. The sign by which he judges has been altogether unperceived up to the present time. In theory, it is such as may be admitted; and the presumption is, that it is of some value.

M. Guenon's discovery is applicable to every country, and the publication of his pamphlet is the only means of ascertaining (by a number of persons observing closely at the same time in different places) whether the method is as valuable as he asserts. One thing is certain, that he appears convinced that the principle upon which he judges is unerring. He acted most fairly and openly before the commission, and secured the approbation of each and all by his straightforward conduct. Their report may be thus summed up:—That the discoverer did not prove all he asserted, but the subject was worthy of further investigation. In pointing out bad milkers, M. Guenon was mistaken only in one instance, and then by omission rather than false declaration. At Rambouillet, there was one bad milker in the number, and that he pointed out at once; and at Alfort one which gave infinitely less milk than the rest was instantly discovered. The commission also declare that the mark by which he judges can be used approximately, in every form and every age.—*Ib.*

Crossing the Musmon with the Sheep.

The Edinburgh Quarterly Journal of Agriculture, says—“It is known that many naturalists, amongst others Cuvier, have presumed that the Musmon of Corsica (*Ovis Musmon*) may be the stock from whence our domestic sheep have sprung. On this supposition, it would be a curious thing to ascertain if a reconciliation could be made between the wild and domesticated races of so useful an animal as the sheep.”

“To attain this object, M. Durieu, receiver-general of the finances at Carcassonne,” says M. Marcel de Serres, “has imported musmons from Corsica, and when a

* Horticultural Journal for July, 1839.

“This sheep, now, we may say, so comparatively little known, inhabits the mountainous wilds of Corsica and Sardinia, and has there only to contend against man as its enemy, no large carnivorous animals existing which would carry destruction among its herds; and it is to this circumstance probably that these islands are indebted to the remnant of the flocks which appear to have formerly existed among the mountains of Spain, and some neighboring parts of the continent of Europe.

“The flocks consist sometimes of a hundred or more, placed under the guidance of some old and courageous male. In a domestic state, the young males and females are docile and gentle; but the old males become subject to ill-natured fits, and sometimes assail children, women, and even men, attempting to bear them down by butting.”—*The Naturalists' Library*, vol. iv. *Mammalia*.—Editor Q. J. Ag.

female of them has been in season, she has been put to a merino ram. These two animals, deprived of their liberty, and coupled, have produced a female cross, which was much more like the sire than the dam (that is the merino than the musmon). Indeed, this hybrid was no longer covered over with coarse reddish hairs, such as those which characterize the musmon; but only whitish wool scattered singly and at intervals among the coarse hairs.

This female cross was then put to a pure musmon ram, and the produce obtained resembled, this time, much more the sire than the dam, (that is, the musmon than the merino). It was reddish coloured like the musmon, and bore only some woolly patches mixed among the reddish hairs, principally upon the neck. This produce was male.

This new cross was put to a female merino, and from that union resulted this time an individual of the male sex, which retained all the characters of its dam. Like her, he was covered with thick enough wool, through which were scattered here and there, reddish hairs, that reminded of its origin.

In all these crosses, obtained as we have stated, the limbs remained always naked, without wool as without hair, and it was the same with the under part of the body. The limbs were remarkable for strength, thickness, and vigor. Their habits also retained those of the musmons; at least those wild, savage crosses do not walk with a proper step, but almost always bound or leap. They also climb with as much ease as dexterity, and, when pursued, dart forward with nimbleness, and readily and quickly fall again upon their four feet.

Such attempts at crossing are continued in order to ascertain the certainty of the crosses being prolific, and if they can be led back to a fixed type, whether that of the musmon or the sheep. Those researches have another object, and that is, to ascertain, by means of crossings, whether the middling size of the merino can be enlarged, and a greater quantity of wool obtained.

“We may mention, that every attempt has been made to cross the he-goat in season, deprived of its liberty, with the female musmon in the same state, but every such attempt to overcome the aversion which they shew for each other has failed.

“It seems to result from these facts, that it is not always possible to triumph over the repugnance which different species feel against mutual crossing; and since the musmon and sheep do cross with one another, it is probable that both belong to one and the same species.”—*Comptes Rendus*, 15th October, 1838.

Poudrette and Farm-Yard Manure.

M. Herbstadt gives, in the monthly journal of the Economic Society of Potsdam, these as the results of his experiments instituted with the view of ascertaining the comparative fertilizing powers of farm-yard manure and poudrette, one of the new compound manures made in France, it is supposed, principally of night-soil.—*Ed. Q. J. Ag.*

“1. Poudrette is a perfect substitute for common dung, whether with respect to price or quality. 2. Its favorable effects essentially depend on the moisture of the season. 3. In dry years it is less efficacious upon sandy soils than upon very greasy or medium clays. 4. It is particularly suitable to very greasy clays. 5. By virtue of the lime and ammonia which it contains, it quickens and develops the inert humus, and the humic acid which often accumulates in the soil. 6. The poudrette combined with organic matter, or in the state it is actually made, is a powerful means of rendering clay land friable.”—*Le Cultivateur* for August, 1838.

Extraordinary Crop.

We are informed that George C. Harness, Esq. of Hardy county, raised the past season, from one acre of ground, one hundred and seventy-eight bushels of corn. Mr. H. cultivated the same with a view for a premium at the approaching Agricultural Exhibition of Hardy county, and the husking and measuring of the corn was attended to by a disinterested, intelligent, and highly respectable citizen of Moorefield. This is the most extraordinary yield, from one acre of ground, that we have ever heard of. Truly, may the South Branch Bottoms, be termed the “garden spots of the Union.”—*Romney Intelligencer*.

The Late Jesse Buel.

The following resolutions were unanimously adopted by the North Anna Agricultural Association, at its first meeting after the death of the late J. BUEL, Esq. They would have been transmitted sooner for publication, but it was not known until the last number of the *Cultivator* was received, that the paper would be continued.

Resolved, That the public spirited, able and successful exertions of J. BUEL, the late Editor of the *Cultivator*, to improve the agriculture of the country, have merited the highest praise, and entitled him to the gratitude of every friend of agriculture, and that this association deplores his death as a public loss.

Resolved, As a testimonial of the estimation in which we held him, and of our regret for his loss, that these resolutions be transmitted to the *Cultivator*, and the *Farmers' Register*, for publication.

W. HOLLADAY, Sec'y.
Spotsylvania Co. Va. Nov. 18, 1839.

Young Men's Department.

The Close of the Year 1839.

(Written for the Cultivator.)

As the labors of the season draw to a close, it is natural and proper for us to take a review of the past, and examine our prospects for the future. The rapid flight of time has brought us to the termination of another year—a year fraught with interest pleasing and painful.

In taking a retrospective survey of the past, we may learn some very important lessons, to guide our course for the future. Three years since, we were all buoyancy and hope; the acquiring a fortune was then but the work of a day; a few successful operations in speculation, were to complete the climax of prosperity, and conduct whoever ventured to embark in it, at once to wealth and fame. The past year has been one of unparalleled commercial revulsion. We are now in gloom and despondency. Many have learned, by painful experience, that industry and frugality are the only avenues to wealth. We have learned that a fictitious value set upon property does not enhance its real worth.

Although many have suffered severely from this blight of their golden dreams, its influence, it is believed, will be beneficial rather than injurious to community. Not that we should rejoice over the calamities of any men; far from it; but when men venture beyond the soundings of reason, they must expect to bring up upon the lee shore of bitter experience. It will check in some degree the strong anxiety, so prevalent among us, to become quickly rich. It will convince us of the greater security of property acquired by severing manual labor, over that accumulated by gambling speculation. It will hold up to our view, the vast importance of agriculture, and the dignity of its pursuit. It will teach us, it is hoped, effectually, that luxury and extravagance are the bane of prosperity, as well as of morality and honesty.

Notwithstanding the melancholy gloom which has spread so extensively throughout the land as to affect all classes of the community, the promise of the Great Ruler of the Universe, that "seed time and harvest should not fail," has this year been most bountifully fulfilled. Nature has not been unmindful of our wants; but, as if to show the superiority of her resources over those of commerce and the arts, we have occasion to rejoice over an unusual abundance of her productions, while the other branches of industry suffer an unusual depression.

In our recollections of the past, there is one event which we cannot but look upon as a public calamity—the death of the respected Editor of the *Cultivator*. The agricultural community, in particular, must feel severely the loss of one so zealous and so efficient in their cause. In him, the young found a faithful and disinterested counsellor: the farmer an able and practical adviser, and all a warm and generous friend. His energetic pen and extensive influence, were exerted for the agricultural and intellectual improvement of his countrymen. His great aim appears to have been to induce the yeomenry of his country to assume the rank, intellectually and morally, which they hold politically: to make the employment of agriculture more honorable, and success in its pursuit more certain—in a word, to render man better and happier. Cut off so suddenly in the midst of a career of so extended usefulness, his loss cannot but be felt by all who value the interest of their country, or the prosperity and happiness of their fellow-men.

The removal from the stage of action, of men so prominent for their usefulness, reminds us, as young men, of the duty of preparing ourselves to fill their stations. On us is soon to devolve the responsibility of giving cast to a nation's character:—to the character of a nation already occupying a conspicuous rank among the empires of the earth; one to which the eyes of all the world are turned, to mark its success or overthrow, in the bold course it has struck out for itself. It will depend on us, whether the free institutions of our happy Republic shall descend in all their original purity to succeeding generations, or whether man is yet to mourn the unsuccessful attempt to govern himself.

There appears to be springing up in our country the germ of principles antagonist to our republican institutions, and it would be well for us to take warning, and shun their evil consequences. Among these, I would mention a passion for extravagance, and aping the practices and manners of European aristocracy—a desire prevalent with the young particularly, to live without manual labor; and the idea that it is degrading to be employed in any kind of productive industry.

The destruction of most of the nations of antiquity, celebrated for the impartial justice of their laws, and the wisdom of their legislators, can be traced to luxury and extravagance. The celebrated historian, Rollin, says in his history of the Persians, "the most judicious historians, the most learned philosophers, and the profoundest politicians, all lay it down as a certain, indisputable maxim, that whenever luxury prevails, it never fails to destroy the most flourishing states and kingdoms; and the experience of all ages and all nations does but too clearly demonstrate the truth of the maxim." We may boast the most profound statesmen, and the most wise legislators, but whether our nation is to maintain its rank among the most favored of the earth for prosperity and happiness, depends upon ourselves.

As our government is constituted, we must govern ourselves well to make it a good government. If we fail here, there is no potency in our institutions to make us prosperous; no efficiency in our laws to render us happy.

The desire to be independent of manual labor—to be employed in some occupation more honorable, is becoming prevalent in our community. It perhaps arises out of our spirit of improvement—from our aspirations after greater and higher attainments; but its effects are prejudicial to our welfare and happiness, individually and collectively. I would not check the desire for improvement: it is only this unnatural tendency of it that I would correct. There is a dignity in industry aside from its usefulness, that should commend it to all. The situation of the industrious agriculturist, particularly, is one which all might desire. Yours, my young friends, is a noble pursuit. Allied to nature in her operations, your labors are amid her genial influences, to mould and direct her expanding forms to suit the wants of man. The All-Wise Creator has so formed our material frames, that labor is necessary not only to continue our existence, but to promote our happiness. We very much mistake our own welfare, therefore, if we would aim to live without it.

Thus much our public—let us now attend to our social and individual duties. Let us labor individually to cultivate those virtues which exalt human nature. Let us remember, that without self-improvement, there can not be general or mutual improvement. Let us labor to improve our intellects by making ourselves acquainted with the natural sciences—with the operations of nature, in the various departments of the physical, the vegetable and the animal world. If we once awaken our minds to what is boundless and vast in the physical world, by taking a view of the unnumbered suns that exist in the regions of space and the worlds that roll around them: to what is beautiful and harmonious in the vegetable world, by observing the form and proportions of plants, and the adaptedness of nature's means to the end in view; and to the symmetry and order in the animal world, by observing the agility of animals, and their fitness to the situations they occupy, and the circumstances under which they are placed; we shall be furnished with motive to still higher improvement—that of the moral and religious faculties: for it is believed, no man in his sober senses, can take a rational view of these sublime productions of nature, and not be convinced of his obligations to Nature's Great Author, and feel a desire to fulfil those obligations.

Without the cultivation of the moral and religious faculties, we fail to accomplish the great end of our being; for, as man stands highest in the scale of animal existences, so these faculties occupy the highest rank in the mind of man. His other faculties render him a noble animal; these assimilate him to God. It is a duty, therefore, we owe both to our Creator and to ourselves, to bestow upon the culture and development of these, more abundant attention. As the plants we value most, receive in proportion a greater share of our labor, so these faculties should be nurtured and cherished with assiduity proportionate to their importance.—Let us be reminded, by the events of the past years, that we are destined to an existence beyond the present, compared with which, in duration and importance, this dwindles into insignificance; and let us so act as most effectually to secure our greatest good, both here and hereafter.

C. P. W.

Albany, December, 1839.

Chemical Catechism—Chapter IX.

[From Purk's Chemical Catechism.]

OF SIMPLE COMBUSTIBLES—concluded.

Does carbon enter into any mineral combinations? It is imagined that most of the metals may be combined with carbon: but at present we know only of its combinations with iron.

What does carbon form when combined with iron?

In one proportion it forms cast iron; in another steel; and in a third proportion plumbago, generally, though improperly, called black lead.(1)

What is the proportion of carbon in cast iron?

Upon an average, cast iron contains, according to the analysis of Bergman, about one forty-fifth of its weight of carbon.(2)

What quantity of carbon enters into the composition of steel?

(1) The name which plumbago has so long borne shows how necessary it was to give a new nomenclature to the science. It is now known that its metallic appearance is owing to iron; and that there is no lead in its composition. Many other instances might be adduced in which the names of substances have given false ideas of their nature and properties—thus, white and green coppers contain no copper, but are formed with zinc, the other with iron.

(2) Cast iron does not owe its brittle qualities to the carbon which is combined with it; for that iron which contains most carbon is found to be the best metal. Cast iron generally contains some phosphuret of iron, and frequently a portion of oxygen: these substances give it its hard brittle quality. To convert cast iron into wrought iron the metal is submitted to a long intense heat, by which means, the carbon burns; and, uniting with the oxygen, both go off in the state of carbonic acid gas. The iron is then carried to the forge hammer, which beats out the phosphuret of iron, and brings the particles closer together. When the iron is required to be pure and good, it undergoes repeated hammering till it is brought to the desired quality.

Steel is iron, combined with about one part of carbon in two hundred of iron.(3)

How is carbon combined with iron so as to form plumbago?

Carburet of iron, or plumbago,(4) has been found to consist of nearly nine parts carbon to one of iron.

You said that carbon formed an acid by its union with oxygen: how is that effected?(5)

Carbon has so great an affinity to oxygen, that when assisted by heat, it will take it from most substances with which it may be combined; in certain proportions they then form carbonic acid gas.(6)

What quantity of oxygen is necessary to convert carbon into carbonic acid?

28 parts by weight of carbon require about 72 parts of oxygen to saturate them; so that 100 parts of carbonic acid are composed of nearly 28 parts of carbon and 72 of oxygen.(7)

What is the specific gravity of carbonic acid?

Carbonic acid can only be exhibited in the form of gas; each cubical inch weighs about half a grain, 100 cubical inches having been found to weigh exactly 47.26 grains.(8)

What are the properties of carbonic acid gas?

Carbonic acid gas is invisible and elastic; is much heavier than atmospheric air; (9) will mix with vital

(3) To procure steel, nothing more is necessary than to heat good pure iron for several hours in a proper furnace, with charcoal, or any substance proper for furnishing a sufficient quantity of carbon, which is absorbed by the iron in the process. Iron has so great an affinity for carbon, that it is even capable of decomposing carbonic acid in a high temperature. See *Philosophical Magazine*, vol. ii., where there is an account of a late mode of making steel by fusing soft iron in crucibles with carbonate of lime. The diamond, which is pure carbon, will also convert iron into steel. This was proved by the ingenious Mr. Chidren, who enclosed a diamond within a slit which he had made in one end of a large iron wire, and having submitted it to the action of galvanism, the diamond disappeared, and the iron was found to be changed into steel.

(4) Plumbago is found in great plenty, at a place called Borrowdale, in Cumberland. Besides making pencils, it is likewise useful to rub over wooden machinery, to prevent friction.

According to Fabroni, plumbago is formed in the humid way, at the bottom of certain wells in the kingdom of Naples, from whence it is regularly collected every six months.

Carburet of iron is found also in various parts of the continent. It often occurs in mountains, in the midst of beds of quartz, or calcareous earth. It has sometimes been found crystallized in octahedrons.

Plumbago, like charcoal, is indestructible by heat, unless with the presence of atmospheric air. It is therefore much used for making crucibles and portable furnaces. It protects iron from rust, and on that account is rubbed on various ornamental cast iron works, such as the fronts of grates, &c.

(5) Take one of those glass receivers generally used for deflating the gases; fill it with oxygen gas, and invert it in a shallow pan of water. Then having a piece of ignited charcoal ready, suspend it by a wire to the stopper of the receiver, and immerse it quickly in the gas. The charcoal will be seen to burn for a considerable time with the greatest splendour, throwing out the most beautiful coruscations. When the inflammation is over, the oxygen gas will be consumed, and the water will be found to be impregnated with carbonic acid; and if some transparent lime-water be poured in, the whole will become opaque from the carbonic acid now formed.

(6) There can be no doubt that carbonic acid is formed by the union of carbon with oxygen; for steel may be made as effectually by the decomposition of carbonic acid, as it can by the direct union of iron with carbonaceous matter.

Carbon takes a gaseous form also by combining with hydrogen and caloric, and forms what is called carburetted hydrogen gas; likewise in the gas discovered by Dr. Priestley, and which Mr. Cruikshank named the *gaseous oxide of carbon*.

(7) Oxygen has a greater affinity for carbon than for most other substances. Lavoisier burned small quantities of charcoal in pure oxygen gas in close vessels, and found that a part of this gas was converted into fixed air, or carbonic acid. He separated this from the rest of the oxygen by means of caustic alkali, and weighed the alkali after it had attracted the fixed air. He also expelled the air again by an acid, and examined its bulk. Thus he learned the weight of the air, and what measure of it had been produced. Then, comparing this weight with that lost by the charcoal which had been consumed, he found it to exceed greatly the weight of the charcoal; and that it was exactly equal to the weight of the charcoal added to that portion of the oxygen gas which had been changed into fixed air. Dr. Black's *Lectures on Chemistry*, vol. ii., page 100.

The composition of carbonic acid has been further proved by analysis, as it has actually been decomposed, and the charcoal exhibited entire. See Mr. Tennant's experiments on fixed air, in *Philosophical Transactions*, vol. lxxxi., page 131. When a diamond is burnt, the proportions are similar to the above, for diamond is the purest carbon we are acquainted with.

Carbonic acid gas may be readily procured for experiment by pouring a little diluted sulphuric acid into a phial, or a retort, upon a little pulverized chalk. An action will immediately commence; and if one end of a bent tube be made fast in the neck of the phial, and the other brought under the mouth of a jar filled with water, and inverted in a vessel of water, the gas will pass from the mixture into the inverted jar.

(8) When charcoal is burnt in oxygen gas, every 100 cubic inches of the gas, which originally weighs 33.75 grains, will then weigh 47.26 grains; and as the gas acquires no alteration in volume, this shows that 100 cubic inches of oxygen will combine with 13.51 of charcoal.

(9) This gas, on account of its density, may be poured from one vessel to another, like water; or may be drawn from a cask by a cock like other fluids. In consequence of its great

air; may be combined with water, to which it gives a brisk and acidulous taste; (10) is destructive of flame, and will occasion the death of animals that are obliged to breathe it. (11)

In what state does carbonic acid exist in nature?

Carbonic acid is found in three different states, viz. in gas, in mixture, and in chemical combination: it is, perhaps, the most abundant of all the native acids. (12)

What instances are there of its natural existence in the state of gas?

It is found in the proportion of about one part by measure in every thousand parts of atmospheric air; also in caverns and mines where it is called the choke-damp. (13)

What instances are there of carbonic acid being found mixed with fluids?

It is abundant in Spa-water, and in some other acidulous waters. (14)

In what substances is carbonic acid found chemically combined?

Carbonic acid is found in all parts of the world in great plenty, in combination with the alkalies, with some metallic oxides, in earths, and in stones; particularly in chalk, limestone and marble. (15)

What is the effect of the combination of carbonic acid?

Carbonic acid renders mild and salutary some of the most acid and destructive of all known substances. (16)

specific gravity it is frequently found at the bottom of mines, wells, &c.

(10) In order to saturate water with this gas, it is necessary to subject it to a considerable degree of pressure. The persons who are engaged in making the acidulous soda water have peculiar conveniences for this purpose. Cider, Perry, bottled beer, and other fermented liquors, owe their briskness and sparkling to the presence of this gas.

(11) Carbonic acid has also the property of rendering lime soluble in water. As the carbonic acid escapes by exposure to the air, the calcareous matter is precipitated from the water which held it in solution; whence arise the various earthy incrustations found in different parts of the world. Fourcroy has very aptly remarked, "that when natural history was less enlightened by chemistry, springs of this kind were called petrifying waters, and were by the vulgar reckoned among the number of miracles."

(12) Plants of all kinds give out carbonic acid gas, while growing in the shade: but when assisted by the rays of the sun, there is reason to think, that the plants have the power of decomposing this acid; for then the leaves give out only oxygen gas. *Annales de Chimie*, tome xiii. page 318.

Mons. Saussure has shown, that when vegetables decompose carbonic acid gas, they throw off only half of the oxygen; and that the other half, with the whole of the carbon, enters into the composition of the plant. He also says, that the leaves absorb oxygen gas in darkness, and emit an equal quantity when exposed to the light. If this account of vegetation be correct, growing vegetables deteriorate the atmosphere in the night, and purify it in the day. The roots, wood, and petals perform no inspiration. See *Philosophical Magazine*, vol. xx. page 308.

(13) The floor of the Grotto del Cane, in Italy, is lower than the door, and this hollow is always filled with fixed air, which can rise no higher than the threshold, but there flows out like water. It has been a common practice to drive dogs into this cavern, where they suffer a temporary death for the entertainment of the passengers; but a man enters with safety, because his mouth is far above the surface of this deleterious air. From the loss of so many dogs, in this cavern, it acquired the name of the Grotto del Cane. The lake of Averno, which Virgil supposed to be the entrance to the infernal regions, evolves so large a quantity of this gas, that birds, flying over it, drop with suffocation.—Fatal accidents have happened to persons who have incautiously descended into brewers' vats and wells, before they have been purified from this gas.

Carbonic acid gas so often occupies the bottoms of wells, that workmen ought never to venture into such places without previously letting down a lighted candle. If the candle burns they may enter it with safety; if not, a quantity of quick-lime should be let down in buckets, and gradually sprinkled with water. As the lime slakes, it will absorb the carbonic acid gas, and the workmen may afterwards descend in safety.

Fatal accidents often happen from burning charcoal in chambers; because wherever charcoal is burned this gas is always formed. Workmen have also lost their lives by sleeping too near lime-kilns, where this gas is extricated in abundance. Whenever persons are discovered in such situations, or are suffering from the effects of carbonic acid gas, the same means should be made use of as are directed by the Humane Society in cases of apparent death from drowning: or when it can be done without loss of time, atmospheric air, or even pure oxygen gas, should be forced into the lungs. I have known galvanism sometimes employed in such cases with the best effects.

Dr. Henry has suggested to naturalists, that butterflies and other insects, the colours of which it is desirable to preserve, for the purpose of cabinet specimens, may be suffocated in carbonic acid gas, better than by the common mode of killing them with the fumes of sulphur.

(14) These waters have a pleasant light acidity and briskness, and sparkle in the glass, like fermented liquors; which is well known to be the case with water, when artificially impregnated with fixed air. Dr. Percival esteems it highly medicinal in pulmonary consumptions, and in malignant fevers.

By great pressure, water may be combined with more than twice and a half of its own bulk of carbonic acid gas. Such waters are considerably more acidulated than those afforded by nature, and have much greater medicinal effects.

(15) Carbonic acid is found combined with alkalies, and with several metallic oxides. These combinations are called carbonates.

A cubic inch of marble contains as much carbonic acid in combination as would fill a six gallon vessel, when in the state of gas.

(16) We all know the causticity of pure quick-lime, and

How is the carbonic acid separated from the alkalies and earths?

Carbonic acid may be disengaged by most of the other acids; but it is usually separated from alkalies by the addition of quick lime, which absorbs this acid, and thus is converted into carbonate of lime. (17)

How is carbonic acid usually procured for chemical purposes?

Carbonic acid gas may be collected in abundance from the surface of fermenting liquors; but it is more commonly obtained by pouring sulphuric acid upon a mixture of chalk, or marble and water.

How do you account for the production of carbonic acid gas in the process of fermentation?

In all vinous fermentations a decomposition of the saccharine matter takes place; and a part of the disengaged oxygen, uniting with a part of the carbon of the sugar, forms carbonic acid. A decomposition also of a part of the water of solution perhaps promotes the process.

What is the cause of vinous fermentation?

The cause of vinous fermentation is not well understood; though it is a process which nature employs and which art can imitate, for the decomposition of certain vegetable substances, (18) (when in favorable circumstances of temperature and solution,) and also for their recombination to form new products.

What circumstances are necessary to produce vinous fermentation?

The presence of vegetable matters, of water, of sugar, (19) a certain degree of heat, and free escape for the carbonic acid as it is generated. (20)

Can you at all account for the change which is effected in saccharine liquors by fermentation?

By the process of fermentation the sugar, which is a vegetable oxide, (21) parts with a portion of its oxygen to form carbonic acid, and becomes converted into alcohol (22) by being thus partially deoxidized.

Does sugar then become spirit of wine, or alcohol, merely by losing a part of its oxygen?

No: it parts with a portion of its carbon at the same time, in the form of carbonic acid gas, and a new arrangement of the principles, both of the sugar, and of

the corrosive qualities of the fixed alkalies; but whenever these substances are fully saturated with carbonic acid, the first forms mild calcareous earth (or chalk,) and the others mild neutral salts, applicable to many purposes of medicine and domestic economy.

(17) Though the alkalies readily part with their carbonic acid to caustic calcareous earth, yet they have a great affinity to this acid, as may be shown by the following interesting experiment.—Fill a jar with carbonic acid gas, then pour into it a small quantity of a solution of caustic potash or soda, and having tied the mouth over with a wetted bladder, move the vessel so as to spread the alkali over its inner surface, when a vacuum will be quickly formed by the absorption of the gas, which will appear by the bladder being pressed inwards by the weight of the atmosphere. If this experiment be made in a glass vessel, its surface will be seen covered with crystals of the alkali, as the carbonic acid always promotes the crystallization of the fixed alkalies.

(18) Fourcroy admits five distinct species of vegetable fermentation, viz. the saccharine (or that which forms sugar,) the vinous, the acetic, the colouring (or that which is developed by the maceration of the indigo plant,) and the putrid. See Fourcroy's *System of Chemical Knowledge*, vol. viii. page 148. Some writers have spoken of another kind of vegetable fermentation, viz. the panary, or that which manifests itself in making bread; but surely this is a species of the acetic, for its tendency to acidify is very evident.

(19) It appears from several late experiments carefully made, that sugar is composed entirely of hydrogen, oxygen and carbon. Mr. Cruickshank made many experiments on fermentation, and invariably found, that whenever he added a fourth substance to the three which compose saccharine matter, no fermentation took place. He tried lime, and at another time a small quantity of potash; and the addition of either prevented fermentation.

(20) To produce vinous fermentation, it is necessary that the matters subjected to that process should be placed in a temperature not lower than about 55 degrees of Fahrenheit. No kind of fermentation is ever known below the freezing point.

(21) Lavoisier, having analyzed sugar, found that it was composed of hydrogen, oxygen and carbon, in the following proportions:—Hydrogen 8lbs. oxygen 64lbs. carbon 26lbs. in every 100 pounds weight of sugar. Lavoisier's *Elements of Chemistry*, page 133. Having subjected 100lbs. of sugar to fermentation, he found the products (alcohol, carbonic acid, and acetic acid,) when analyzed, contained the precise quantities of hydrogen, oxygen and carbon, which were contained in the original sugar. The particular detail which he has given of these experiments is extremely interesting. Ibid. page 185 to 197. In consequence of the results which were obtained, he remarks, "The effect of the vinous fermentation upon sugar is thus reduced to the mere separation of its elements into two portions: one part is oxygenized at the expense of the other, so as to form carbonic acid; while the other part being deoxygenized in favor of the former, is converted into the combustible substance called alcohol." Ibid. page 196. The strongest alcohol of commerce is seldom of a less specific gravity than that of 0.825. Proof spirit, or the spirit of wine employed in pharmacy, has a specific gravity of 0.930.

(22) Alcohol, according to the analysis of Lavoisier, is composed of

| | |
|--------------|-------------|
| Carbon about | 30 parts. |
| Hydrogen, | 7.5 parts. |
| Water, | 62.5 parts. |
| 100.0 | |

But as this analysis was made by burning alcohol in oxygen gas, it is probable that the greater part of the water was formed during combustion. Hence the real component parts of alcohol are not accurately known.

the water in which it is dissolved, taking place, furnishes an increased proportion of hydrogen, in order to form vinous liquor. (23)

Endeavor to recollect the different properties of charcoal, which you have enumerated in this chapter.

Charcoal appears to be indestructible by age; it is not in the least altered by the most intense heat, if heated in closed vessels; when burnt in atmospheric air it becomes converted into carbonic acid gas; it is a valuable antiseptic; it is the basis of all vegetables; it is one of the component parts of wax, oils, gums, and resins; and from its affinity to oxygen it has the property of decomposing many substances in which oxygen constitutes a material part.

How did chemists become acquainted with all these properties of charcoal?

Formerly, nothing was known of charcoal but its indestructibility and its antiseptic qualities. The other peculiar and surprising properties of charcoal were reserved for the discoveries of the present age; for these we are most especially indebted to the labours and genius of Black, (24) Priestley, (25) Cavendish, Lavoisier, Guyton, Tennant and Berthollet, and to the gradual development of the present improved system of chemistry.

What reflections naturally present themselves on the consideration of the various properties of charcoal and the other simple combustibles?

This subject, when considered in all its connexions, is calculated to produce the most profound admiration; and serves to convince us of the unbounded comprehension of the Divine mind, which, in the act of creation, could foresee and appoint such important effects to result from the combinations and changes of the most inodorous and insipid substances. We also learn, that all the works of the Creator are perfect; and perceive with astonishment, that they are composed of elements which are in themselves incapable of destruction.

(23) The spirituous or intoxicating quality of all fermented liquors is owing to the alcohol they contain, whether it be malt-liquor, wine or spirits. Alcohol expands by slight degrees of heat more than any other fluid;—hence the propriety of employing it in forming thermometers. The same degree of heat which expands glass one degree will expand alcohol 130 degrees.

Alcohol has various uses in pharmacy and chemistry. It dissolves the resins and volatile oils. Hence its employment in the preparation of spirit varnishes. It is employed also in chemistry, in separating those salts from each other which cannot easily be separated by any other means. It dissolves the oxalic, tartaric, and some other acids. The salts which are dissolved in the greatest quantity by alcohol are the muriates of magnesia and of lime, and the several nitrates of magnesia, lime, alumina, ammonia, and soda.

(24) In the year 1755, Dr. Black discovered the acid gas which is thrown off from fermented liquors and from mild calcareous earth. He called it fixed air.

(25) Dr. Priestley explained the effect of charcoal in decomposing nitrous acid, examined the gas that is thrown off in this decomposition, and pointed out the necessity of distinguishing the different gases from common air; for which the Royal Society awarded him an honorary prize.

In the years 1766 and 1767, Mr. Cavendish published papers in the *Philosophical Transactions*, on the nature of elastic fluids, in which he announced that he had produced fixed air by the burning of charcoal. This assurance called the attention of all chemists to that surprising substance, and was the forerunner of the many discoveries which have since been made respecting its properties, &c.

Lavoisier pointed out the nature of the action of charcoal in reducing metallic oxides; investigated the nature of the combustion of the diamond; announced the exact quantity of carbon in carbonic acid, and the production of carbonic acid by the decomposition of water with ignited charcoal.

| ARTICLES. | New-York, | Boston, | Philadelphia, | Baltimore. |
|-----------------------------------|-----------|----------|---------------|------------|
| | Dec. 20. | Dec. 20. | Dec. 17. | Dec. 20. |
| Bone, white, per bushel,..... | 1 25— | 1 50— | 1 50— | 1 75— |
| Beef, per ewt,..... | 6 50— | 7 00— | 7 00— | 7 00— |
| Bacon, western, per lb,..... | 0 03— | 0 10— | 0 08— | 0 10— |
| Butter, fresh, per lb,..... | 0 12— | 0 15— | 0 16— | 0 22— |
| Cheese, per lb,..... | 0 12— | 0 11— | 0 10— | 0 10— |
| Cotton, best, per lb,..... | 0 08— | 0 10— | 0 12— | 0 15— |
| Flax, best, per barrel,..... | 6 00— | 6 25— | 6 00— | 6 25— |
| Grain—Wheat, per bushel,..... | 1 10— | 1 15— | 1 22— | 1 30— |
| Rye, per bushel,..... | 0 70— | 0 71— | 0 70— | 0 71— |
| Oats, per bushel,..... | 0 31— | 0 41— | 0 46— | 0 52— |
| Corn, per bushel,..... | 0 62— | 0 65— | 0 78— | 0 86— |
| Hams, per lb,..... | 0 10— | 0 13— | 0 10— | 0 11— |
| Pork, in hog, per ewt,..... | 6 50— | 7 25— | 5 50— | 7 00— |
| SAF.—Red Clover, per bushel,..... | 8 00— | 9 00— | 5 25— | 5 75— |
| Timothy, per bushel,..... | 9 75— | 3 00— | 2 75— | 3 00— |
| Wolf—Saxony, steers, per lb,..... | 0 55— | 0 60— | 0 55— | 0 60— |
| Merino, per lb,..... | 0 50— | 0 55— | 0 50— | 0 55— |
| 4 and comon, per lb,..... | 0 37— | 0 40— | 0 45— | 0 47— |
| Sheep, per head,..... | 2 00— | 2 50— | 3 00— | 3 25— |
| Cows and Calves, each,..... | 2 00— | 2 50— | 3 00— | 3 25— |
| | 30 00— | 35 00— | 33 00— | 34 00— |
| | 25 00— | 30 00— | 25 00— | 30 00— |
| | 35 00— | 40 00— | 33 00— | 40 00— |

Prospectus of the Cultivator, Vol. VII.

A CONSOLIDATION OF

Buel's "Cultivator" and the "Genesee Farmer."

WILLIS GAYLORD AND LUTHER TUCKER, Editors.

JESSE BUEL & CO. Proprietors.

THE first number will be issued in January, 1840, at which time all existing subscriptions will terminate, and the paper will be discontinued, unless the subscriptions shall have been or are renewed. The price, as heretofore, will be *One Dollar* a year, payable in advance. Postmasters, agents and others, who will obtain subscribers, and transmit the subscription moneys free of charge, will be allowed commissions at the following rates:

| | |
|--|-------------|
| For ten subscribers or over, - - - - - | 10 percent. |
| twenty or over, - - - - - | 15 " |
| thirty or over, - - - - - | 20 " |
| one hundred or over, - - - - - | 25 " |

On ten or more copies for schools, or agricultural premiums, a discount will be made of 33 per cent.

It has been decided by the Postmaster-General, that postmasters have the right to enclose money to the publishers of newspapers, for third persons. This liberal construction of the post-office law, we hope, will induce postmasters to take an interest in the circulation of the *Cultivator*, which we may assume, without vanity, will tend to improve agriculture wherever it circulates, and consequently to benefit the neighborhood.

The publication of the *Cultivator* was commenced at 25 cents per volume; the price was afterwards advanced to 50 cents, and at the commencement of the fifth volume, to one dollar per annum. It is due to our patrons and ourselves to explain the cause of this increase in price. The size of our pages has been enlarged, the quantity of matter increased, and the quality of the paper improved, until the expense of type-setting and paper, the two prominent items of our expense, is now more than double what it was when the price was **50 cents**, and four times as great as it was when the price was **25 cents**. To enable the reader to judge of its now relative cheapness, compared with literary periodicals, we state for their information, that a volume of the *Cultivator*, including its usual extra sheet, contains about double the quantity of matter that is contained in two volumes (published in a year) of the *North American Review*. The subscription price of the two volumes of the *Review* is five dollars—that of the *Cultivator* one dollar. To be equal in proportion to the quantity of matter, the price of the *Cultivator* should be ten dollars a year.

We are enabled only to print the *Cultivator* at this small price, from the extent of our subscriptions; and we are indebted for our liberal subscription to the kind offices of our correspondents and agents. To these we tender again our hearty thanks, and respectfully invite a continuance of their favors, both in behalf of the publishers and their patrons.

No papers will be forwarded to any subscriber, unless paid in advance, either to the proprietors, or to their authorized agents.

Should any gentleman to whom the Prospectus may be sent lack leisure to present it to his neighbors, he will do us a favor, and we think a public service, by placing it in the hands of some one who will take an interest in soliciting subscriptions.

Agents will please number the subscribers whose names they send us, from one onwards, the more readily to determine the total, and to assist in keeping accounts correct.

To meet the public demands, we have published a new edition of our four first volumes, which may be had, stitched at 50 cents per volume, and also in different forms of binding, with the addition of the binders' charge. Bound copies have been forwarded to our agents in Boston, New-York, Philadelphia, Baltimore, Washington, Alexandria, Richmond, Savannah, New-Orleans, St. Louis, Nashville, Hartford, Utica, Greensboro', Ga. and Norfolk, Va.

If it is noted by punctual agents, that any subscriber wishes his paper continued *till forbid*, it will be so continued, the agent holding himself responsible for the subscription.

In our next volume, we intend to dispense with advertisements, and print a semi-annual or quarterly advertising sheet, providing sufficient encouragement is given.

TO SEEDSMEN.—A young man who has been engaged in the seed business for a number of years, wishes to obtain a situation in a similar establishment. He is thoroughly acquainted with the business in all its branches, and can furnish testimonials from his last employer as to capability, and a line addressed to R. S. care of Wm. THORNBURN, Seedsman, Albany, N. Y. will meet with attention, Albany, Dec. 1st, 1839.

It

FRUIT and ORNAMENTAL TREES, ROHAN POTATOES, &c.—An extensive assortment of the finest varieties of Fruit Trees, and Ornamental Trees of large size. A fine collection of *Herbaceous Plants*, *Peonies*, *Roses*, &c. 30,000 genuine *Morus Multicaulis* of large size, the growth of *Virginia*. Also, 1,000 bushels *Rohan Potatoes*. Orders addressed to the subscriber will receive prompt attention.

Newton, (Mass.) Dec. 1, 1839. JOHN A. KENRICK.

MORUS MULTICAULIS.—25,000 trees for sale, either in quantities or all together, and to be delivered at any time that may best suit the purchaser. They are from imported cuttings, of the genuine *Morus Multicaulis*, were planted in May last, and are of the most vigorous growth, measuring from three to five feet in height, with large collateral branches. Purchasers are invited to call and see them, at the residence of Gen. Morgan Lewis, Staatsburgh, Dutchess county, state of New-York, where the owner lives, as he thinks they will not suffer by a comparison, with any in the United States. Staatsburgh, Dutchess co. Sept. 11, 1839. [act. 4t] MATURIN LIVINGSTON.

ALBANY NURSERY.—This establishment now offers perhaps the best collection of Pears now in the country; [see the June number of the *Cultivator*.] Also, Apples, Peaches, Plums, Ornamental Trees, Green-House Plants, &c. &c. A catalogue will soon be printed, and forwarded to order. Address J. BUEL & CO. post-paid.

HARPER'S SCHOOL DISTRICT LIBRARY, second series—price \$20, including a case. From the Hon. JOHN C. SPENCER, Secretary of State and Superintendent of Common Schools.

Office of Superintendent of Common Schools, Albany, October 30, 1839.

Messrs. Harper & Brothers—Gentlemen—I have received the second series of the School District Library, published by you, and have carefully examined it. It gives me great pleasure to express my entire approbation of the books individually, and of the selection as a whole. A large number of excellent books may be easily found in our language; but to select only a small number of forty or fifty in reference to the wants and taste of the community, so that they shall embrace subjects sufficiently various to interest and yet impart the largest amount of instruction, is a task of much difficulty. This you have accomplished. And I feel bound to say, that I consider this series superior to any other collection, for the same purpose, within my knowledge. While you have consulted novelty in having some original works, you have not sacrificed utility, but have studied to promote it. The cheap price at which it is afforded is, I believe, entirely unparalleled. No person who purchases it, either for a district circulating library or for his family use, will ever regret the bargain.

I cannot forbear acknowledging the spirit and enterprise which have carried on and completed the publication of these books in time to enable the school districts to procure them before the navigation of the canals is closed. Very respectfully, your ob't serv't. JOHN C. SPENCER.

51, 52. *Life and Works of Dr. Franklin*, with a portrait on steel; new edition, in 2 vols.

53, 54. *The Farmer's Instructor*; consisting of essays, practical directions for the management of the farm, garden, &c. By the Hon. Judge Buel, with engravings; in 2 vols.

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60, 61, 62, 63, 64, 65. *Universal History*, from the creation of the world to the decease of George III. 1820; by the Hon. Alexander Fraser Tytler and Rev. E. Nares, D. D.; edited by an American; in 6 vols.

66. *Illustrations of Mechanics*; by Professors Moseley and Renwick; with numerous engravings.

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68, 69. *Paley's Natural Theology*, with illustrative notes; by Henry Lord Brougham, F. R. S. and Sir Charles Bell, K. G. H., F. R. S., L. & E.; with numerous woodcuts; to which are added preliminary observations and notes, by Alonso Potter, D. D.; in 2 vols.

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From his excellency W. L. MARCY, late Governor of the state of New-York, dated "Albany, October 29, 1839."

"Messrs. Harper—Gentlemen—I have availed myself of the opportunity you have afforded me, to examine the second series of the School District Library; and though I thought the *first* a very judicious and appropriate selection, I am inclined to believe the *second* preferable to it. Some of the books contained in it I have never read, but the subjects of which they treat are such as should in an especial manner be presented to the class of readers for which the library is intended.

"The introduction of libraries into our district schools is a new and highly valuable feature in the system of popular education. The character of the books which you have published for this purpose, and the low price at which they may be obtained, must, I think, facilitate the establishment of such libraries. I sincerely hope that you will meet with sufficient encouragement to induce you to continue the series. I am with great respect, your obedient servant,

"W. L. MARCY."

The above, together with the *First Series*, are for sale by all the principal Booksellers throughout the state.

 **MORUS MULTICAULIS AND OTHER MULBERRIES, &c.**—The subscriber is now ready to receive orders to any reasonable amount, for trees of the *Morus Multicaulis*, or cuttings of the same. The trees are genuine, all being raised by the subscriber, either at his nursery here, or at his *Southern establishment* at *Portsmouth, in Lower Virginia*. Also, the *Brussa*, *Canton* and *Moretti* or *Alpine*, &c.

The collection of *Fruits* is of the most celebrated kinds. The catalogue of *Fruit and Ornamental Trees and Shrubs, Roses and Herbaceous Plants*, for 1839, is ready, and will be sent to all who apply. In that catalogue, the very best kinds of fruits, so far as proved, are particularly designated by a star. All orders will be promptly attended to; and trees, when so ordered, are securely packed for safe transportation. Nonantum Hill, Newton, Mass. 7th October, 1839.

WILLIAM KENRICK.

MULBERRY TREES.—25,000 *Multicaulis*, *Alpine* and *Expansa* *Mulberry* trees, and a few thousand *Silk Worms* Eggs, for sale by S. E. GIBBS & SON, Address them at Brooklyn. October, 1839. 3t.

MULBERRY TREES.—A few thousand *Mulberry* trees are for sale at the Albany Nursery. They consist of the *Multicaulis*, *Brussa*, *Chinese*, that is, the product of Chinese seed, and the *common white*. The prices will depend upon size and quality. The *Brussa* is more hardy than the *common*, and the *Chinese* about as hardy; and the three kinds are believed to be equal, if not superior, to the *Multicaulis*, for silk; though it is proper to add, none of the mulberries that we have tried are propagated with so much facility, from buds and cuttings, as the *Multicaulis*. The prices will be conformed to the average market price. If

ROHAN POTATOES.—The subscriber is now prepared to furnish the above very valuable root for transportation, at \$5 pr. bbl. until the 1st Nov. delivered at Albany. Persons living at a distance, will find it to their interest to forward their orders early, so they will reach their destination before cold weather sets in. Orders enclosing five dollars, (postage paid) or more, will meet with immediate attention. CALEB N. BEMENT.

Three-Hills Farm, Albany, Oct. 1st, 1839.-3t

 **ROHAN POTATOES.**—Orders received for Rohan Potatoes, at \$5 per barrel, to be forwarded, as may be directed, without delay, by J. BUEL.

THE FARMER'S COMPANION, or Essays on the Principles and Practice of American Husbandry; with the Address prepared to be delivered before the Horticultural and Agricultural Societies of New-Haven County, Conn.; and an Appendix containing Tables and other matter useful to the Farmer, by the late Hon. Jesse Buel; this day published and for sale by MARSH, CAPE, LYON & WEBB, No. 109 Washington-street, Boston.

FLORA'S INTERPRETER.—A new edition, this day published by MARSH, CAPE, LYON & WEBB, No. 109 Washington-street, Boston.

IMPORTED CATTLE—BERKSHIRE PIGS.—The subscriber intending to return to England, offers for sale his stock of Imported Durham Short Horned Cattle and Berkshire Pigs, at his residence, English neighborhood, Bergen county New-Jersey, five miles from New-York. The stock consists of 15 head of milking cows, 1 two-year old heifer, 4 one-year old heifers, and from 8 to 10 spring calves. Four of the above cows are imported, and the remainder are got by the imported Herd-Book Bulls *Dishley*, *Durham*, *Wye-Comet*, *Hall's Comet*, *Memnon*, *Admiral*, *Denton*, &c.

BERKSHIRE PIGS.—Ten breeding Sows, in pig and with pigs by them at the present time; from 40 to 50 Pigs ready for delivery at any time, at prices from \$10 to \$20 per pair, delivered in New-York.

The imported Herd-Book bred bull *Bloomsbury* is with the Cows for the season, and from present appearance will soon all be in calf. The yearlings and spring calves are all by my bull *Snow-Hall*, late *Minevis*, by *Wye-Comet*, dam *Nelle*, bred by Israel Munson, Esq. of Boston, got by the imported bull *Admiral*; grand-dam *Rosa*, bred by Mr. Munson, by the imported bull *Denton*, owned by Stephen Williams, of Northborough, Mass.; great-grand-dam *Tuberose*, bred by Mr. Wetherall, and imported by Mr. Munson.

For further particulars, see Herd-Book: *Dishley*, page 63; *Durham*, page 567; *Wye-Comet*, page 200; *Admiral*, page 2; *Denton*, page 43; *Tuberose*, page 524.

BENJAMIN BRENTNALL, English neighborhood, Bergen co. N. J. 5 miles from N. Y.

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